2021 Refugee Youth Summer Academy Science Curriulum

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Refugee and Immigrant Focus

Dear Reader,

We hope that by reading this document, you are able to duplicate and get inspiration to create your own lesson plans. By no means are the lesson plans perfect, but we wanted to provide science education for refugee and immigrant students in our five-week summer camp held annually. Students are taught by an instructor Monday through Friday, where students come to Paradise Parking Plots on Tuesday and Thursday. On Monday and Wednesday the students are involved in a variety of subjects such as art and math. They are allowed to explore outside on Friday at different locations. These students on Tuesday and Thursday are our responsibility (with instructor support), where we work to include Next Generation Science Standards (NGSS) and on-site learning.

Students were separated into age groups such as K-1st, 2nd-4th, and 5th-8$^{th.}$ Where K-1st was the Tomato group, 2nd-4th corresponded with Carrot, and 5th-8th adopted Kale. This year we had around 30 students separated into these groups and further into a morning and afternoon group. Our teachers were high schoolers from Kenya, Iraq, and Burma through our Equity and Sustainability Internship at Paradise Parking Plots. With a supporting Equity and Sustainability lead intern from Mexico and a Project Manager Intern from Canada. As with all cohorts of students, there are varying levels of English and understanding. The K-1st afternoon group was more advanced in topics that were being taught and thus are taught at their level as the summer camp went on, whereas the morning K-1st group may never had experience in a classroom after the pandemic.

We thank everyone that has helped us along the way in the development of these lesson plans directly and indirectly such as our 2021 intern cohort Naomi Kuria, Fatima Ali, Bo Ma (Equity and Sustainability Cohort), Fredy Castillo (Equity and Sustainability lead), and Elisha Gill (Project Manager Intern). As well as Lucas McClish (Garden Coordinator), Kaila Korosec (Americorp member), and World Relief Staff that has helped put together this curriculum. We would also like to recognize individuals outside of World Relief Seattle who had trained our interns prior to lesson creation: Risa Suho (Stormwater), Peter Donaldson (Sustainability Ambassadors, teaching strategies), Ellen Southard (Salmon), and Liere Hiedi (Insects/Garden Creatures).

We created these lesson plans in addition to the understanding that refugee and immigrant students may have different needs and individualized learning than students in the regular school year. Teaching is not effective teaching without adaptability and finding a way to engage the students in what they are learning.

Enjoy the rest of the document!

Sincerely,

Camp Objective

K-8th students will be exposed to different science concepts every week that are culturally relevant and taught at the level of refugee and immigrant students that have varying English skills. Often bringing up intersectionality between topics and using project-based learning both with inside and outside components, we touch upon displacement, stormwater, freshly grown food, marine life, and insect knowledge.

Weekly Learning Targets

Week 1: Refugee, Immigrants, and Coast Salish Tribes

Students will be aware of how to relay their stories and how they relate to the past and present of native people already here.

Week 2: Watersheds, Stormwater, and Our Solutions

Students will learn how watersheds and stormwater work as well as how communities have come together to solve the problem of flooding and pollution.

Week 3: Marine life

Students will piece together food chains, the marine animal ecosystem in the Pacific Northwest, and the types of salmon as well as their reproductive behavior.

Week 4: Soil and Plants

Students will identify what plants need, the different types of plants as well as the name of those plants, and the importance of soil mixed with compost.

Week 5: Garden Creatures and Wrap Up

Students will understand the importance of insects as well as their biological components, and be able to relay the connections they have made so far of different science camp topics.

Lesson Plan Content

NGSS (Next Generation Science Standards (k-12 science content standards): Standards set the expectations for what students should know and be able to do. The NGSS were developed by states to improve science education for all students.

Topic Keywords: Highlighted words for anyone looking through the lesson plans for a specific topic.

Content Background: What the students should have prior knowledge and how they acquired that knowledge.

Learning target: The students should know how to do these objectives after the lesson has been taught.

Activity Overview: An overview of the lesson plan activities in one or two sentences.

Presentation(s)/Print out(s): These are presentations, printouts, and anything else that was used with activities.

Materials: A list of materials needed for the lesson.

Vocab: Words that we emphasized and encouraged the students to use in their sentences.

Preparation: What needs to be set up before the lesson.

Activity: The lesson activity signaled by steps.

Age Adjustments: Adjustments according to age. These are set up as K-1st, 2-4th, 5-8th groups.

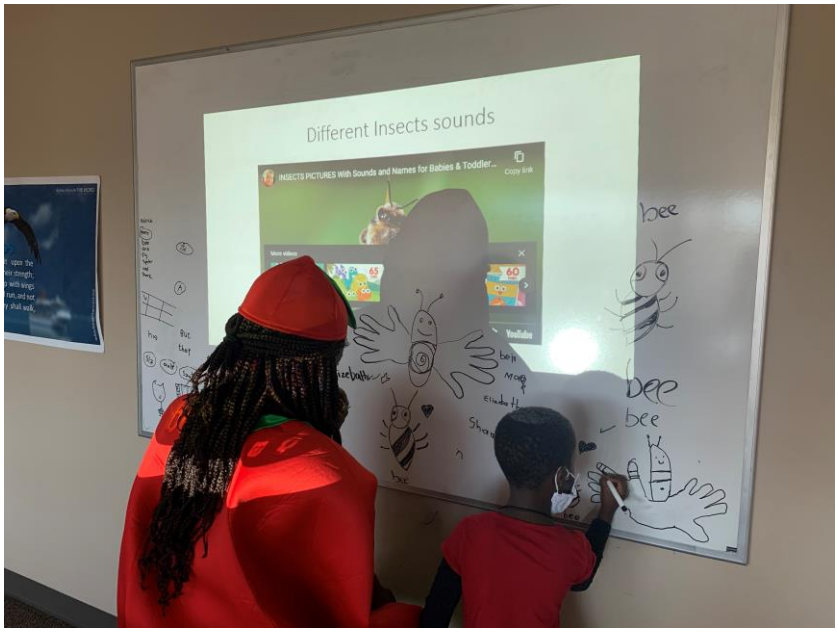
Supplementary Activities/ Lesson extensions: Activities to do if there is extra time left over or would be beneficial to add to the activity if taught in a longer time period.

NGSS (Next Generation Science Standards)
K-12 science content standards

We recognize that learning about science in K-12 schools can be better implemented in schools where students learn by doing and are better equipped for a world of technology and robotics. Washington state is one of the states participating in Next Generation Science Standards (NGSS) and many states are joining as the years go on. Learn more about the standards here: https://ngss.nsta.org/About.aspx

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Above are the NGSS that were used for our lesson plans. There are gaps between the standards we wanted to implement in the lesson plan and the actual lesson plan as the goal to achieve NGSS is an ongoing process. We encourage filling in the gaps with activities that satisfy the standards that are not already in our lesson plans.



Lesson Plans Ahead

Where Are We?

NGSS (Next Generation Science Standards (k-12 science content standards):

4. Analyzing and interpreting data

7. Engaging in argument from evidence

8. Obtaining, evaluating, and communicating information

Topic Keywords: INSTRUCTOR/STUDENT INTRODUCTIONS, COUNTRY FLAGS, MAPS, SHAPES/COLORS,

Content Background:

Students should know the area where they live right now and have knowledge of routes to school, summer camp, their house and location of their most common places. K-1st might have not been to school/been to school and will be the first time they are in a classroom setting. 2nd-4th: If they've been in school, home subjects - math, some English, basic science. Otherwise, these students might also not have been in a classroom setting yet. Lastly, the students should have knowledge of where they are from and what their ethnicity is/where their family is from but is not expected to know about the ethnicities around them.

Learning target: Students should be aware of where we are and the area, we live in. As well as understand how this area affects them and expanding the knowledge of what is around them.

Activity Overview: Students will relate themselves to places they have been, are now, or are from with stories, food, flags, music, names, and more.

Presentation(s)/Print out(s):

Print outs:

Flag pt 1:

https://worldrelief.sharepoint.com/:w:/s/sea/EVPOFmsp2vBHvTdia7GALUEBBljHsdsBm_qX-N1tSZSJNA?e=UuKhbl

Flag pt 2:
https://worldrelief.sharepoint.com/:w:/s/sea/EWMhqKeQamVDpyQFYQafrZcBAAMZgIUZV498icEdRuT6FQ?e=O8iV9y

Shapes worksheet option:
https://worldrelief.sharepoint.com/:w:/s/sea/ETh_d4FgjGJOtSgqUEc3N70Bihw70zzD8hC8T1dg-1cUJQ?e=XKh0Cg

Colors option:
https://worldrelief.sharepoint.com/:w:/s/sea/EYmFC2JL_CRCmzu_uOLOFkgB0zcSq4jOK8-THwEL9t8UIw?e=BadJAP

Other flag flashcards:
https://worldrelief.sharepoint.com/:w:/s/sea/EZbX2iGRGO9JijVOi7OF4qkBk9MNkfcRgw8ds61e5GXIcQ?e=iGfdFr

Kent Map:

https://worldrelief.sharepoint.com/:i:/s/sea/EUkyMNTkP7hDv0ouZnLgDXMBtGfB_zflVW6R88MYjmOw6Q?e=R2wuAX

Materials:

- Monitor
- Audio playing device/speaker
- Map of the world
- Print out: Flashcards of flags, shapes, and colors
- Print out: Kent map, cut out to puzzle pieces
- Print out: Flags & country names flashcards

Vocab: Any country name

Preparation:

- Gather materials.
- Find songs/audio to play beforehand
- Print out flashcards of flags, shapes, and colors
- We will have a flag in each garden plot to show where each gardener's home country is

Activity:

Age Adjustments:

Inside:

K-1st:

1. Introduce intern instructor (2 mins)
    a. Create an example and have students take turns sharing
    b. Be open to being vulnerable to help the kids feel comfortable
    c. Give space for students to ask follow up questions
2. Kids introduce themselves (5-7 mins)
    a. Their name

   b. Their age
   c. What school they go to
3. Use Google maps and show one thing that defines each place (or a 3d map - kid friendly) (10-25 mins)
   a. Washington – Show Trees/Apples, Washington state flag
   b. United States – Play a kid friendly song about U.S., National anthem or classic American song
   c. Other countries – That the students are from, show food, songs, or flags
   d. "We're all from different places"
4. Talking about shapes/colors (read along with the kids) (20-30 mins). *This knowledge will lead to the outside activity.
   a. Introduce each shape/color
   b. Review after before going out

2nd-4th:

1. Introduce intern instructor (2 mins)
   a. Create an example and have students take turns sharing
   b. Be open to being vulnerable to help the kids feel comfortable
   c. Give space for students to ask follow up questions
2. Kids introduce themselves (5 mins)
   a. Their name
   b. Their age
   c. What school they go to
3. Use Google Maps (or a similar 3d map). Students will tell stories of how they relate to the place and country chosen (20 mins)
   a. Students tell a story of their journey & what they miss/like about their home country.
      i. If students don't know what a home country is, use intern instructor example to show relation.
   b. Name places that students have been to in America. Guessing game of where students think the location is and then the instructor can reveal the answer.
      i. Where is New York?
      ii. Where is Florida?
      iii. Where is California?
      iv. Where is Washington?
      v. Where is Kent?
4. Zero in on Kent area (10 mins)
   a. Have students try to solve puzzle of the Kent area
   b. Show them places they might recognize (school, shops, parks…)

5. Flashcards of flags and country names activity (10 mins) *. *This knowledge will lead to the outside activity.
    a. Have 4 or more flashcards of country flags and names on back.
        i. Examples:
            1. Afghanistan
            2. Syria
            3. Burma
            4. Bhutan

5-8th:

1. Introduction music - when the students are coming in
    a. Traditional music from their country
2. Introduce intern instructor (2 mins)
    a. Create an example and have students take turns sharing
    b. Be open to being vulnerable to help the kids feel comfortable
    c. Give space for students to ask follow up questions
3. Students introduce themselves (5 mins each)
    a. Add questions
    b. Let other kids ask questions as well
4. Giant map – Students pinpoint locations in their travel to U.S. (25 mins+)
    a. Have students explain their journey/story
    b. Talk about where they would like to go to and why they want to
    c. Take a picture of where they have been to develop future lesson plans
5. Name different countries and associate it with a flag and something you know about that country. * *This knowledge will lead to the outside activity.
    a. Add in facts about countries and see what the students knows
6. What we want to accomplish: “We’re coming together as a community”! Getting to know each other.
    a. Ask students:
        i. Where Washington is?
        ii. Where Kent is?
        iii. Places they frequent?
        iv. Schools they go to?

<u>Outside:</u>

1. Scavenger Hunt (45 mins)
    a. Younger kids- find a flag that has a star or is the color blue.
        i. Print out a picture of a flag, color, or shape.

1. Then say aloud what flag, color, or shape the student should be looking for.
2. Point system of who gets this first.

b. Middle kids – consider language proficiency
   i. Flashcards of different countries that are in the garden. Show the flag first (maybe on phone), then ask student to find that flag.
   ii. When flag is found, say name of country and have students repeat it.

c. Older kids- find a flag from a specific continent ex- a country in Asia or Africa.
   i. Ask students what is something you know about this place?
      1. Point system of how much you know about the place. Anyone is able to get these points.
      2. Use paper flags with name first
      3. Use name of the country to let kids test kids
      4. Use shapes and/or colors etc. To find a flag similar to your description

Supplementary Activities/ Lesson extensions:

K-1st: Getting kids to move around

If this is you...

If you're this gender, stand up.

If you like this color, stand up.

Been to this country stand up.

Been from country stand up.

If this is where you want to go stand up.

What language do you speak?

2-4th : Show flags on phone & spend time pronouncing it & learning it.

Learn about the states that we talked about from inside lesson.

5-8th: Story & sharing

1. Kids are telling a story time about themselves
   a. Let them continue their stories

Coast Salish Tribes and Refugees

We recognize that we are standing on the land of the Coast Salish tribes, specifically the Muckleshoot and Green-Duwamish Tribes. As well as the broken treaties such as the Treaty of Point Elliot and promised reservations that were not honored. We thank and honor the original stewards of the land as we learn from them in this lesson plan. For more information on which tribal land you are standing on, explore this website: https://native-land.ca/.

NGSS (Next Generation Science Standards (k-12 science content standards):

1. Asking questions (for science) and defining problems (for engineering)

2. Developing and using models

6. Constructing explanations (for science) and designing solutions (for engineering)

8. Obtaining, evaluating, and communicating information

Topic Keywords: NATIVE AMERICANS, TRIBES, CULTURE, MAPS/MAPPING, NATURAL VS MAN MADE

Content Background: From the previous lesson, the students should know where are we at (Kent) and have knowledge (facts, songs, flags) about different countries and where their class is from. Students are also aware that they are at paradise parking plots, although they might not know the features of Paradise Parking Plots yet.

Learning target: K-1st: Students should be aware that there were people that were here before them, understand and re-iterate their cultural values, as well as how people living before us affects us now (positively).

2-4th: Students should understand that there were people here before us, how they used to live, that they still live here, and where they are now.

5-8th: Student should know the areas of the people that used to live here and what their area and culture looks like now.

Activity Overview: The students will learn the meaning of being culturally sensitive, compare and contrast past and present cultural practices, land, as well as imagine working together to survive.

Presentation(s)/Print out(s):

GENERAL LESSON PLAN PRESENTATION:
https://docs.google.com/presentation/d/1ERmbXpy5z_xpH0a1IRL7q8Yjp8ht6LVjQuAthHfv-0k/edit?usp=sharing

5th – 8th Presentation:

https://worldrelief-my.sharepoint.com/:p:/g/personal/bma_wr_org/EW2k-wy5OU9LsJWZTtmbcW8BGgLGWKT5K-Ri4AicKb5tfQ?e=qegJDk

Traditional tribal clothing/cultural pieces coloring sheets:

https://worldrelief.sharepoint.com/:i:/s/sea/ET9nYuOdlz5OpO6aK5TPEfQB4FK75z-_HwLbn4qxeFOZpg?e=lc3dM1

https://worldrelief.sharepoint.com/:i:/s/sea/EUf4kTJX5XtLmr5V-2jfRBMBO77N9YJJONaH8RJrI9OmpQ?e=xMbP6e

https://worldrelief.sharepoint.com/:i:/s/sea/EbMh5falXHlKra-AVqLEXTsB5ydlgxuX6btlfuhX-IZPPQ?e=XtIodC

https://worldrelief.sharepoint.com/:i:/s/sea/EXrKTebof1VNjEOjxVywctUB-HvzFCV8rIUdpPrKuABeVA?e=Dup8eC

https://worldrelief.sharepoint.com/:i:/s/sea/EQIdsBFtc3tOvN1lwaWA6bcBiwc3v3zNRi_SEYwzk36pIQ?e=tsfjM6

https://worldrelief.sharepoint.com/:i:/s/sea/EVzfOo8uQ3VPsr7ixqAjljwBEu4x4OFwbHJMfBPKwxRxAw?e=3ALvp1

https://worldrelief.sharepoint.com/:i:/s/sea/EfN8h68F5PdCgiTs82n_Km8B_9sE_dIVdB3s5XBcXUlaFg?e=MniC0A

https://worldrelief.sharepoint.com/:i:/s/sea/EbzDF2r2VmFCvyIWC7eNoiYBAxz8cq3rvGoppRQKCCgQCA?e=0dteQm

Resource(s): TRAINING POWERPOINT: **https://docs.google.com/presentation/d/1tgcGCG-1u_oB2Ysgu3rgTtEECz7vGdpntEW0a2tpGTY/edit?usp=sharing**

Duwamish River, before and after: https://livingshorelines.be.uw.edu/duwamish-river-then-to-now/

Duwamish River during dredging (straightening): https://www.duwamishcleanup.org/river-history-and-photographs

Waterlines Map: https://www.burkemuseum.org/static/waterlines/images/maps-and-images/waterlines_map_medium.pdf

Cedar Mat Weaving: https://www.dcyf.wa.gov/sites/default/files/tribal-training/3.2_Cedar_Mat_Weaving.pdf

Materials:

- Monitor
- Plant – singular (simple houseplant)
- Snap Cubes
- Coloring sheet of traditional tribal/cultural pieces
- Paper and glue. Scissors and colored pencils.
- Salmon fishes (plastic - Walmart), salmon berries

Vocab: Natives, Any tribal name

Preparation:

- Find videos about tribes in Washington
- Print out maps
- Have monitors set and ready to go

Activity:

Age Adjustments:

Inside:

K-1st:

1. Explain to be respectful to the Native American's culture and land. (1-3 mins)
2. Play video about tribes (https://www.youtube.com/watch?v=uxNDKlh-Vjo) (~5 mins)
    a. Cultures (talking more about what food they eat and grow)
    b. Berrys (Huckleberry), greens, fish (salmon)
3. Define the difference between natural and human-made (5 mins)
4. Have students spot the difference between the two visual examples:
    a. Plant
    b. Math cubes, students are building
5. Compare and contrast Native American culture back then and now. (10 mins)
6. Show how the people affected us land wise via lesson plan presentation.
    a. What does our land look like?
    b. Show picture of native Americans
    c. How are they different then vs now?
    d. Show picture of longhouses
    e. Who used to live here? How many people?
7. Coloring traditional tribal clothing/cultural pieces (18 mins)
8. Re-iterate to be respectful. * *This knowledge will lead to the outside activity. (2 mins)

2nd-4th:

1. Explain to be respectful – cultures. (5 min talk)

2. Ask students what do you think happened before you came to the U.S.? Who do you think was here? (5 min) – Who was here before us? Americans. Who was here before Americans? …… native Americans
3. Show videos about native Americans highlighting their culture & positive impacts specifically their daily life. (Shelter, food & traditions) (~5 mins)
    a. • Discussion about the video & talk about cool facts about Native American tribes
    b. • Building a Longhouse activity (20 mins)
        i. • Show the modern longhouse of the Muckleshoot Tribe
4. Map of tribal area vs Reduced area for Muckleshoot Tribe (10 mins)
    a. (How much land they had then & how much land they have now)
    b. • Ask them if they've went through the same thing before in their life?
5. Re-iterate to be respectful. * *This knowledge will lead to the outside activity. (2 mins)

5-8th:

1. Explain to be respectful. (1-3 mins)
2. Maps (Washington area (northern west Washington)) and pointing where places are. (20 mins)
    a. Explain a fact about each tribe
    b. Or explain about the tribe you choose to present on
        i. Tradition, how they collected food, how they built their houses, where they built their houses
        ii. Let kid guess the river connection
        iii. River connection
3. Before and after maps. (10mins+)
    a. Spot the difference between the two
4. Extra: Native American connections to the kids (facts)
    a. Explore the connection between the kids and Native American
    b. Use the connections learned about the kids the day before
5. Supplementary Activities: Coloring pages if finished early.
6. Re-iterate to be respectful. * *This knowledge will lead to the outside activity. (2 mins)

<u>Outside:</u>

ALL

- K-1st teacher opens with the goal and the goals of each age group.

3 tribes – Create names as a group (5-10 mins)

_____ tribe – K-1ST: Has to look for food around the garden (10 mins)

- Ask students what the Muckleshoot tribe ate.
    - Salmon? Salmonberries?
- Where can we find these things?
    - Cistern! Below the tree!

_____ tribe – 2-4TH: Has to provide shelter (10 mins)

- Ask the students what shelter looks like for tribes.
- How are we going to make shelter?
- Let's assign roles...
    - Collector
    - Builder

_____ tribe – 5-8TH: Has to look for clean water? (10 mins)

1. Let kids come up with their own tribe name
2. Why did the Natives build their homes near water?
    a. What can you get from water?
    b. Food! Salmon. Crops
    c. What is the difference between freshwater and clean water?
3. Finding sea animals throughout the garden
    a. Try to hide near water
    b. Hide near water loving plants
    c. Use reward as a motivation as needed

Trading time (15 mins) - The 3 "tribes" will work together to provide food, shelter & water. Interns & Instructors will work with the kids if any help is needed**.**

Supplementary Activities/ Lesson extensions:

- Tribal/Cultural coloring sheets
- Acknowledging the tribes
    a. Names & facts (5-8th) of the tribes
        i. Tribes that we missed
    - Original stewards of the land
        - They took care of the land before we did
        - What are some problems that tribes face today?

Watersheds & Stormwater

NGSS (Next Generation Science Standards (k-12 science content standards):

2. Developing and using models

4. Analyzing and interpreting data

6. Constructing explanations (for science) and designing solutions (for engineering)

8. Obtaining, evaluating, and communicating information

Topic Keywords: WATERSHED, WATER CYCLE, STORM WATER, RAIN GARDEN

Content Background: The students should have gone through week 1, so they know about PPP and where they are in the world (Kent). However, they won't know a lot about stormwater and pollution which are one of the problems that PPP helps to solve. Older students may know a little bit of the water cycle, but we should not rely on that assumption. All the kids should have a real world understanding of where the water may go (streams and rivers).

Learning target:

K-1st: Students will learn what watersheds are and how it relates to them.

2nd-4th: Students should know what watersheds are and the important/major parts as well as be able to re-iterate what they learned and important/major parts.

5th-8th: Students will understand the basics of a watershed and explain to others how watersheds work.

Activity Overview: Students will replicate water cycle dances, watershed models, water movement, and tie these topics together to piece together stormwater runoff and solutions.

Presentation(s)/Print out(s):

General Presentation:
https://docs.google.com/presentation/d/19YbLo3Jn22TB_729BrzKJ9A7OJwbWmQuqyuGC6k66gk/edit?usp=sharing

K- 1st Presentation:
https://worldrelief.sharepoint.com/:p:/s/sea/EZcjMZSICCpPryqShNxqE5wBxEbOal4xwpXdjipbXdVqRw?e=GXeNOb

Print outs:

-watershed.jpg (700×658) (fs.fed.us)

-diagram of watershed - Bing images

Watershed maps

https://waecy.maps.arcgis.com/apps/webappviewer/index.html?id=996e6b21ae394cc3a3b63c6da0c3aa0a

within-water-cycle00.jpg (982×1024) (coloringpagesonly.com)

R.9a9b1f26b31b8543c17dbd0fe680da37 (918×740) (bing.com)

Coloring Page: The Water Cycle – Climate Change: Vital Signs of the Planet (nasa.gov)

Videos:

-watershed YouTube video: option 1 (stop at 1:28) What is a Watershed? - YouTube

Option 2 possibly for older kids: What is a Watershed Illustration - YouTube

-water cycle YouTube video: https://youtu.be/ncORPosDrjI OR https://youtu.be/y5gFI3pMvoI

Water cycle song: Water Cycle - Blazer Fresh | Science Video | GoNoodle

Materials:

- 15 Play-doh
- Bottle of water with different intensity sprays
- 30 Paper Cups
- 2 Wax paper
- Laptop
- Projector
- Paradise Parking Plots maps
- Video: YouTube Video of Watershed
- Print out: Diagram to show watershed
- Print out: Coloring sheet of watershed

Vocab word for lesson:

- Watershed (any part, mountain/river/stream/water cycle)

Preparation:

- Gather and print out diagrams of watershed

Activity:

Age Adjustments:

Inside:

K-1st

- Explain what a water cycle is with the activities below (10 minutes)
    - Play a water cycle video (3 minutes)
    - Reiterate what the video explains with drawn out explanation (2-3 mins)
    - Start a water cycle dance with your hands and have students repeat (10 mins)
        - Evaporation by fingers waving up in the air and moving hands up
        - Condensation by forming hands together as a cloud
        - Precipitation by fingers waving in the air moving down
- Explain what a watershed is with the activities below. (10 minutes)
    - Teacher explains parts of the watershed with coloring sheets
    - Allow students to color the sheets afterwards

*If break is needed, allow students to do an outside activity before moving to the watershed paper demonstration.

    - Do the watershed paper demonstration as a group (10 mins)
        - Crinkle water
        - Ask students to draw mountains, houses, people, roads, etc.
        - Spray water on the paper
        - Ask students where the water is going.
        - If younger group is a bit more advanced: Explain how water cycle goes into the watershed
- Instruct on building watershed with Play-doh. It might help to have an example beforehand but let the students go off of their imagination. (30 minutes)

2-4th

- Introduce what the students are learning today. (2 minutes)
    - "Today we are learning about the water cycle and watershed. Do you guys know what those mean?"
- Explain what a water cycle is with the activities below.
    - Ask "How do clouds form?" (5 minutes)
        - By the water cycle!
    - Start a water cycle dance with your hands and have students repeat (10 minutes)
        - Evaporation by fingers waving up in the air and moving hands up
        - Condensation by forming hands together as a cloud
        - Precipitation by fingers waving in the air moving down
- Ask students do a skit on how a water cycle could look like and have students present on what they came up with. (10 minutes)

  - One student could be a stream
  - One student could show rain
  - One student could be a mountain
- Explain what a watershed is with the activities below. (10 minutes)
  - YouTube Video of Watershed
  - Ask students what they learned
- Instruct on building watershed with Play-doh. (20 minutes)
  - Where do they live in the watershed?
  - How could you as the instructor challenge the student to improve their watershed?

5-8th

Tip: Show a lot of examples/references of the water cycle & watershed.

1. Introduce what the students are learning today. (2 minutes)
   a. "Today we are learning about the water cycle and watershed. Do you guys know what those mean?"
2. Play a water cycle video and explain water cycle is. (7 minutes)
   a. Ask students how clouds form? Add questions to start a thinking process within students.
      i. Answer: Heat warms up the water until it becomes a cloud.
   b. Start a water cycle dance with your hands and have students repeat. (10 minutes)
      i. Evaporation by fingers waving up in the air and moving hands up
      ii. Condensation by forming hands together as a cloud
      iii. Precipitation by fingers waving in the air moving down

= For this section, draw on/out the diagrams while giving out explanation =

3. Explain to students what a watershed is with the activities below. (15 minutes)
   a. Diagram to show watershed
   b. Major parts are pointed out
   c. Explain why parts are important
4. Instruct on building watershed with Play-Doh (15 minutes)
   a. Build mini watershed
   b. As an instructor, analyze their watershed and ask students what they could do to improve their watershed?
      i. What went wrong? What went well? (analysis)

<u>OUTSIDE:</u>

ALL GRADES:

- Going outside to learn about watershed/stormwater (15 minutes)
    - Kids have water in a cup and pour down the hill.
        - What do you notice?
        - Connect to a watershed
        - Rain garden
    - Ask what would happen next? (with 5-8th age group, add heat)
        - Evaporation
        - Condensation
        - Precipitation
- **Rain garden (30 mins):**
- Introduce what a rain garden is.
    - "What does it collect? Water!"
- Kids build a rain garden like the longhouse activity

Supplementary Activities/ Lesson extensions:

- Allow students to color watershed diagrams (see coloring page from NASA under "Watershed maps"
- Have a reflection on what students have learned
- Start Thursday's lesson plan and get ahead of teaching

Cistern: Cisterns hold water

- How water falls from the roof into the cistern
- (With 5-8th, ask what does this represent?)
    - It represents a watershed!

Rain garden:

- Pollution activity
    - What does the rain garden do?
    - What is pollution?

Stormwater Solutions

NGSS (Next Generation Science Standards (k-12 science content standards):

1. Asking questions (for science) and defining problems (for engineering)

2. Developing and using models

6. Constructing explanations (for science) and designing solutions (for engineering)

8. Obtaining, evaluating, and communicating information

Topic Keywords: POLLUTION, WATERSHED, INDIVIDUAL IMPACTS, SOLUTIONS TO POLLUTION, URBANIZATION, CISTERNS

Content Background: Students will have gone through Tuesday, so they know about the watershed. They are also aware of the basics of rain gardens and are starting to be comfortable with what is at Paradise Parking Plots.

Learning target:

K-1st:

Students should know what water pollution is, the effects of water pollution, as well as big (Paradise Parking Plots) and small (individual) solutions to water pollution. Students should also find the connection between watersheds and water pollution.
2nd-4th:

Students should know what water pollution is, the effects of water pollution, and big (Paradise Parking Plots) and small (individual) solutions to water pollution, as well as how urbanization is causing water pollution.
5-8th:

Students should know what water pollution is, the effects of water pollution, and big (Paradise Parking Plots) and small (individual) solutions to water pollution, as well as how students contribute to pollution.

Activity Overview: Students will play a game replicating trash pollution, reflect on why any type of pollution can be bad, and small actions they can do to help the watershed as well as explore big actions that communities have taken to combat different types of pollution.

Presentation(s)/Print out(s):
General Presentation:

https://docs.google.com/presentation/d/1AxmZeDmrFTJz2BjShfr0vVw3PM908ux2eV9V9MISqlY/edit?usp=sharing

K-1st presentation:

https://worldrelief.sharepoint.com/:p:/s/sea/Eb2SvWf9H9xGqGzp09TF8LEB6sUrGBT0S3ED5-sZ7Dge3g?e=ZbGO6m

Print-out(s):

PPP construction flashcards:
https://worldrelief.sharepoint.com/:p:/s/sea/Ef8YIJoEpMdNr0F3Q-m-aYwBPIopjnz2gUZdz-068BnP7g?e=OwqpDh

Individual small actions to protecting the watershed infographic:
269abd77b9c746603aa8d67329ba0578.jpg (792×1215) (pinimg.com)

Videos:

Water Saving Tips and Tricks - Let's Save the Planet - The Environment for Kids - YouTube

Water pollution | Water Contamination | Video for kids - YouTube

Materials:

All grades:

- Trash - candy wrapper, chemical – olive oil (or any other oil)
- PPP Construction Flashcards
- K-4th: 1 trash can, and 15 pieces of scrap paper

K-1st

- PPP Maps
- Print out/Video: 1 Video & 1 infographic about personal choices on how to save our watershed

2nd-4th

- 1 Coffee filter
- 2 Paper Cups
- Dirt
- Kent map

5-8th

- Whiteboard & dry erase markers

- Magnets
- Mind map: 1 large sticky note paper, marker

Vocab: Pollution

Preparation:

- Gather materials
- K-4th: Set up the basketball activity
    - With the trashcan, take off the lid so throwing into the trash can is easier.
    - Take the scrap paper and cut all of the papers in half.
        - Then crumple up the paper to symbolize trash.

K-1st:

- Get trash or some pollution

2nd-4th:

- Prepare dirty water to go through a cup with and without a filter (coffee filter)

5th-8th:

- Have a white board ready
- Have a video of pollution preloaded

Activity:

Age Adjustments:

<u>Inside</u>**:**

K-1st

1. Go over the presentation for the pollution lesson.
2. Start pollution game. Combine with the 2nd-4th class if possible. (15-20 minutes)
    a. First ask students what pollution is, then explain the answer if no student had gotten it. (10 mins)
    b. Set up the basketball activity w/ paper.
        i. Explain that trash is bad and we should throw it away.
        i. Have students line up and throw away the crumpled paper away.
        ii. Ask students what made it easier to throw trash away. 2nd-4th students may have a more robust answer to this.
            1. “If we all clean up together then it is easier.” * *This foreshadows community coming together to create rain gardens and stormwater solutions.

2. "We can also put trash into one place." * *This foreshadows the explanation of a rain garden.

3. Ask students why is pollution bad? (10 mins)
    a. Answer: "We don't want this in our home".
        i. "What would you mom say if this piece of trash (hold up trash) was in your room?"
            1. "We wouldn't want that!"
    b. Ask the students what happens if trash goes into ocean.
        i. Fishes don't like it.
        ii. "And some of us eat those fishes"

*If break is needed, allow students to do an outside activity before moving onto the watershed protection section.

4. Ask students what is one thing we can do to protect the watershed? (10 mins). Write down the students' ideas.
    a. Personal choices
        i. Turning off the faucet if you're not using it right away (brushing teeth)
        ii. Planting vegetable, flowers that don't need to much water
        iii. Can create your own compost
        iv. Help pick put after your pets if have any
    b. Why do these personal choices help?
        i. Stopping pollution!
        ii. They save water!

2nd-4th

1. • Play pollution video and follow up with the pollution activities below (15 minutes). https://youtu.be/OasbYWF4_S8
    a. What is water pollution?
        i. Pollution is the introduction of harmful materials into our Earth…
    b. Start pollution game. Combine with the 2nd-4th class if possible. (15-20 minutes)
        i. First ask students what pollution is, then explain the answer if no student had gotten it. (10 mins)
        ii. Set up the basketball activity w/ paper.
            a. Explain that trash is bad and we should throw it away.
        2. Have students line up and throw away the crumpled paper away.
        3. Ask students what made it easier to throw trash away. 2nd-4th students may have a more robust answer to this than K-1st.
            a. "If we all clean up together then it is easier." * *This foreshadows community coming together to create rain gardens and stormwater solutions.
            b. "We can also put trash into one place." * *This foreshadows the explanation of a rain garden.

   c. Show the difference of clean water vs polluted water (5 mins)
      i. Filter comparison:
         1. Pour dirty water in cup through the filter.
         2. Pour dirty water in cup through nothing!
   d. Ask them how pollution has impacted them here and back home. (5-10 mins)
2. Introduce urbanization in cities with the activities below. (5-10 mins)
   a. Where is Paradise Parking Plots?
      i. Answer: "Kent!"
      ii. Instructor adds in the detail that "Kent has a lot of buildings & roads"
      iii. Why is this important?
         1. Answer: "Buildings and roads build trash and chemicals!"
   b. Teach them how polluted water can cause a negative impact on the Earth and connect it to our daily lives.
3. Introduce Paradise Parking Plot solutions. Ask if students can guess what the solutions are. (10 mins)
   a. For each solution, give lots of hints & opportunities for students to guess. Also explain what each one does.
      i. Cistern
      ii. Rain Garden
      iii. Bioswale

5th - 8th

1. Use hang man (or a similar game like snowball) to teach the group about the basic of Tuesday lesson + today's vocab (see "Vocab" above in this lesson plan).
   a. Describe as much as possible without giving away the answer
   b. If need have picture as backup
2. Ask students what pollution is.
   a. Add on: is pollution good or bad, what examples can student give etc.
   b. Have whiteboard and make list with students on pollution types
3. Explain to students that we are going to do a Mind Map. Where we physically see how everything connects as a group on a piece of paper
   a. Figure out how the students impact watershed (mainly): Start small (you, family, friends etc.)
      i. Figure out if that impact is negative or positive
         1. Solutions: let student think about it first (then make suggestions like shorter showers, fix water leaks etc.)
   b. Then big (school, city, state (you or the student choose) etc.)
      i. Figure out how other things effect watershed
         1. Use Paradise Parking Plots example of how they are helping to begin the process of thinking. For each solution, give lots of hints

& opportunities for students to guess. Also explain what each one does.

a. Cisterns
b. Bioswale
c. Gardening (planting)

ii. To encourage thinking - ask students how these stormwater solutions help prevent pollution?

Outside: EXPLORATION ACTIVITY for 2-8TH :(Let's see what we can find...) – Show paradise parking plot maps to students, let students choose where they want to go first. The options are:

- Bioswale
- Cistern
- Rain Garden

EXPLORATION TIME (30 mins):

- Walk to the bioswale,
  - Why does the bioswale help the animals?
  - Ask follow up questions based on this lesson plan and previous lesson plans.
    - "How does this bioswale connect to the watershed"?
- Walk to the cistern,
  - Ask students...
    - "Why does the cistern help the animals?"
    - "How does the cistern collect water?"
    - "What do these pipes on the cistern do?"
- Jog student memory about polluted water.
  - Show the stormwater drains.
  - Explain to students that the polluted water goes through these stormwater drains.

K-1st Outside activity: K-1st students are doing something similar to 2nd-8th but is more guided activity. See below and lead the students to the different places.

- What is Paradise Parking Plots doing about pollution? (10 mins)
  - They're stopping it!
  - How? By the rain garden...
  - How does the rain garden do that?
  - Does anything else do that? Bioswale
  - Cistern?
  - Let's go see outside...

Cisterns

- Ask students what cisterns do...

- Show them the cisterns.
- Ask where they collect the water from. (Rooftop of the church)
- Cistern filter

Rain Garden:

- Ask students what rain garden do...
  - Natural made vs human made
- Activity about how the rain garden takes the storm water and filter it/ Show the difference of clean water vs polluted.)
  - Filter comparison:
    - Dirty water in cup through the filter (could use funnel cup)
    - Dirty water in cup through rain garden!

Bioswale:

- Ask students what a bioswale does
  - Solution: (to) flooding
- Show them example of how the PPP is helping with watershed. Like construction that is going on (Bioswale)
  - Bioswale construction papers, pass them around? Point out important parts.

-

If outside is too hot for any of the students or if there is leftover time, go back inside and have students to the Paradise Parking Plots construction activity:

- Print out the flashcards (in the "Print-out(s) above) and have students rearrange the flashcards in the order that they happened.
  - Ask students what happened in each flashcard.
  - Explain to the students the story of the garden.

Supplementary Activities/ Lesson extensions:

- Have them re-iterate what they learned with the word of the day.
- Create dance parties for students, find a song similar to the subject of the lesson and have students follow along with dancing.
- Question about this lesson (if they need help with this week a little bit more)
  - next week's lesson (if they totally understand this week)

Marine Animals

NGSS (Next Generation Science Standards (k-12 science content standards):

1. Asking questions (for science) and defining problems (for engineering)

2. Developing and using models

8. Obtaining, evaluating, and communicating information

Topic Keywords: MARINE VS LAND ANIMALS, SALTWATER VS FRESHWATER, FOOD CHAIN

Content Background: Students should have gone through week 2 and have understanding about the water cycle and immigration/migration from week 1. K-1st graders will need some help with naming animals in general and identifying the difference between land animals and marine life. 2nd-4th graders will be able to gather connections in marine life and ecosystem, but are not able to name the connection yet and will possibly need to be reminded of the animals.

Learning target:

K-1st

- By the end of the lesson, they should know the difference between marine animals and land animals & why they're important to our ecosystem.

2nd-4th

- By the end of the lesson, they should know the difference between marine animals & why they're important to our ecosystem.

5-8th:

- By the end of the lesson, they should know how the animals interact in the food chain, ex. A worm gets eaten by a bird and the bird is hunted by a cat.

Activity Overview: Students will make their own food web and will replicate the ecosystem around the Pacific Northwest using models.

Presentation(s)/Printout(s):
K-1st presentation:

https://worldrelief.sharepoint.com/:p:/s/sea/EZ3CL_DFwqBJoF00CD1d3q8BvLd1fl4B-rYKrlHidW4BRg?e=E35VQh

Print outs (flashcards):

https://worldrelief.sharepoint.com/:p:/s/sea/EUBaR8aRJK1JtIPHDUacIEABbBF5wv-ZM27ifwyBw-qLlw?e=fcPaxg

Print outs (coloring pages):

Sea & Ocean Animals coloring pages | Free Printable Pictures (supercoloring.com)

https://www.google.com/aclk?sa=l&ai=DChcSEwjOn7X8xunxAhU1IK0GHS3MBxgYABAKGgJwdg&sig=AOD64_1SBTZNhCQDp-eyJAdPzOhfuro5xg&ctype=46&q=&ved=0ahUKEwj9t7D8xunxAhVY_J4KHUmODlgQqygInwc&adurl= (chalk)

Materials:

- Sensory Bin:
  - Kinetic sand
  - A large plastic bin
  - Small plastic animals
- Plastic cups
- Playdough
- Paper
- Glue
- Paper
- Marine animal cut outs (black and white)
- Kiddy pool
  - Inflator for kiddy pool
- Color pencils
- Scissors
- Nets
- Blue water beads
- Animal flash cards (https://www.amazon.com/Richardy-Animals-Learning-Montessori-Pre-Kindergarten/dp/B07MC727S3/ref=sr_1_9?dchild=1&keywords=animal+flash+cards&qid=1626505626&sr=8-9
- (How to make pop up books) https://www.youtube.com/watch?v=AXJ9i8bvxOY&ab_channel=SSCraftMantra

VOCAB: Any marine animal (see below for list for marine animals in the Pacific Northwest)

Marine life

- Sea cucumber
- Sea urchin

- Octopus
- Jellyfish
    - Moon Jelly
- Sea otters
- Sea lions
- Starfish
- Anemones
- Sea slug

Land animals:

- Pig
- Cow
- Sheep
- Horse
- Duck
- Goat
- Chicken
- Wolf
- Bear

Preparation:

K-1st: Print out photos of marine animals and set up the sensory bin. Ready up cups with animal figurines in them.

2nd-4th : Set up the sensory bin and prepare the animal cut outs. Ready up cups with animal figurines in them.

5th -8th : Have the materials for the book making set out and colors ready.

For all: The day before – soak the blue water beads in water so that they expand. Before the lesson, make sure that the kiddy pool is inflated.

Activity:

Age Adjustments:

<u>Inside:</u>

K-1st

1. Students each get a cup with a mystery animal. They will choose which cup they want.
    a. Students place the animals into the sensory bin each time it is their turn to show what animal they got. Names what animal was revealed from the cup.

2. Hold up animal flashcards, then says the animal's name and has the students repeat what they are seeing.
    a. Cow
    b. Salmon
    c. Pig
    d. Starfish
    e. Etc
3. Students have a competition on who can name the most land and water animals with the animal flashcards.
    a. Land animals' vs marine animals. Have students guess which animal is marine/land and the name of the animal.
4. Ask students what the difference is between saltwater and freshwater?
    a. If students cannot say, tell them the answer.
        i. Answer: Freshwater has low salt like ponds. Saltwater has high salt like ocean.
5. Ask the student why different animals live in different water?
    a. If students cannot say, tell them the answer.
        i. Answer: Animals adapt to different environments.
6. Have a little demonstration to explain the importance and difference of fresh and salt water.
    a. Use the animal figurines and salt to create two bins. One with fresh and the other with salt water. Ask students to help you create this demonstration.
    b. With the demonstration talk about how fish adapt to their surroundings to survive and connect it to the differences of fresh water versus salt.

2nd-4th

1. Students each get a cup with a mystery animal. They get to choose which cup they want.
    a. Students place the animals into the sensory bin each time it is their turn to show what animal they got.
    b. You should say a fun fact about the animal that the student chose.
2. Ask what this bin represents.
    a. It represents an ocean!
3. Ask what an ocean is and what are marine animals.
    a. If students cannot figure out the answer to either, gives hints until they get the answer and then explain the definition of each.
4. Ask how these marine animals survive.
    a. These marine animals survive by eating each other! Some marine animals also need to eat plants!
    b. Ex. Dolphin eats fish.

5. • Get into food chain & ask them which animal might be the top and which one might be at the bottom.
    a. Use the animal figurines to play a little simulation of one animal eating the other. The eaten animal is taken off the table.
6. • Watch a cartoon video about food chain or an educational video.
    a) National geographic educational video: https://www.nationalgeographic.org/media/marine-food-webs/
    b) Cartoon Video: https://www.youtube.com/watch?v=u1-CsgYxMnc&ab_channel=e-Learn (Skip to 2:20 for marine food chain)

5th - 8th: Food Chain (Main idea)

1. Go over a PowerPoint to present on the basic of what eats what and the order of the food chain.
    a. Examples:
        i. Bear
        ii. Orca
        iii. Mosquito
        iv. Starfish
        v. Salmon
2. Food Chain Pop-up book (this will take up most of the time)
    a. Create a food chain pop up example (s) before class and show to everyone
    b. Explain how to make a pop-up book to students
    c. Give materials
        i. Paper
        ii. Color paper
        iii. Markers
        iv. Scissors
        v. Glue
        vi. Anything else needed for the pop up
    d. Give time to let everyone color the cut outs
    e. If they want, they can create one big story of a food chain
        i. Create a story board
        ii. Create a basic layout of where the different animal and plants goes
    f. If needed help create a food chain for each student
        i. Let students lead the food chain
        ii. Ask teacher or floaters for help

<u>Outside:</u>

1) SECOND HALF: Have a small kiddy pool filled with water beads and plastic marine life and make them catch fish with nets. Ask probing questions on how each animal connects to the other. Ex does your animal eat ____. Have you seen this animal before and how was it?
    a) Tips:
        i) Don't make the water beads too big as the net will not be able to survive through the lesson.
        ii) Give students caution that they may get wet. Ask students not to lean on the kiddy pool as water may flow out.

Supplementary Activities/ Lesson extensions:

- Use the flash cards to make an activity or quiz the kids using the flashcards.
- Reflection time
    - Halfway through the camp
    - Journaling/piece of paper
        - K-1st: Name the animal they drew
        - 2nd-4th: What they learned today.
            - Ask students why we want to keep our oceans clean?
                - Have students think about this question, there are many answers and many are personal to the student.
        - 5-8th: If they know the order of the food chain.
            - Have students think about the difference between saltwater and freshwater
            - Why do we want to keep our oceans clean?
                - Have students think about this question, there are many answers and many are personal to the student.
            - Watch an educational video or cartoon about marine life or keystone species.

Salmon-Safe

NGSS (Next Generation Science Standards (k-12 science content standards):

1. Asking questions (for science) and defining problems (for engineering)

2. Developing and using models

5. Using mathematics and computational thinking

6. Constructing explanations (for science) and designing solutions (for engineering)

8. Obtaining, evaluating, and communicating information

Topic Keywords: MARINE LIFE, SALMON, ECOSYSTEM, LIFE CYCLE OF SALMON, BIOSWALE

Content Background:

K-1st:

They should know that fish exist and how fishes look (the patterns and colors of different fish).

2nd-4th:

They should know some parts about the bioswale, our idea of the clean water and the difference between different types of plants (marine vs land).

5-8th: They should know about the food chain and where the salmon could be and understand how a life cycle works based off themselves.

Learning target: Students should know how the environment affects marine life and the importance of salmon conservation.

Activity Overview: Students will make their own food webs and observe examples of ecosystems.

Presentation(s)/Printout(s):

K-1st Presentation:
https://worldrelief.sharepoint.com/:p:/s/sea/EXFN6gyKfwBHsRGh8rH33PgBg2GuTE09aGZtSlr34g-SuA?e=lgc9Eq

Print outs:

https://worldrelief.sharepoint.com/:p:/s/sea/Eep1UdXvrqdAj3eeI3FP-YABrMOlMmbus39yBQLGn4Go8Q?e=48mY4V

https://worldrelief.sharepoint.com/:b:/s/sea/EexR_D3lw7JLgB6a0YcHZh8Bl8djYHiu5d0gdQzlYvKOpg?e=e3ePHC

salmnColoringBk.pdf (fws.gov) (Tip: only print out the pages you need to conserve paper)

Coho Salmon coloring page | Free Printable Coloring Pages (supercoloring.com)

PSF Salmon Life Cycle_0.pdf

life-cycle-of-a-salmon-coloring-page.png (793×1063) (supercoloring.com)

Resource(s):

https://www.psf.ca/learn/salmon-facts

Materials:

All:

- Chalk
- Water beads
    - Container

K-1st

- Coloring paper, crayons, the book "Run Salmon Run"
- Small fishes

2nd-4th

- Big poster, glue sticks, coloring supplies, fish outline

5-8th:

- Monitor for the video.
- Cut outs of marine animals

Vocab: Food chain

Preparation:

K-1st :

- Have pieces of paper ready, and stockpile of coloring devices crayons, markers, etc.
- Have small fishes hidden around paradise parking plots.
- Bring in the flashcards from Tuesday.

2nd-4th :

- Have a poster prepped with a river drawing and information that shows what salmon eat and other animals rely on that food source.

Outside:

- Have pictures of different salmon and a reward ready.
- Save water beads from the previous lesson or soak new water beads and put them in a container for outside salmon egg activity

Activity:

Age Adjustments:

Inside:

K-1st:

1. Have students reflect on the animals from the Tuesday lesson. What are some animals they remember? Bring out flashcards from Tuesday to jog their memory. (4min)
    a. Cow
    b. Salmon
    c. Fish
    d. Pig
    e. Etc
2. Quiet the kids and read a book about salmon (Run Salmon Run) (6 minutes).
3. Talk about marine life and ask questions about the environment and the marine life.
    a. ex. What do you think they eat what eats the fish? Etc. (5 minutes)
4. Why is saving marine life important?
    a. Answers may vary, but lead students to the understanding that...Who eats the fish? WE DO!
5. Then pass the coloring papers so they can start coloring the salmon. (Linked above) (15 minutes)
    a. Give students the different types of salmon. Students should look at each other's coloring and see some differences in design.
6. Give the kids different salmon pictures and have them find their partner (the other kid that has the same salmon. Then have the partners line up together (5 minutes)

2nd-4th:

1. Students guess what animals they remember from the Tuesday lesson.
    a. Jog their memory on what marine animals are.
2. Tell a story to the students with a visual of a whiteboard or pictures.
    a. Story: There is a native American story that illustrates how everything is connected. The story starts on a mosquito starts on a mosquito sucking our

blood then it gets eaten by a fish and the fish is eaten by a bear. When the bear dies it gives birth to new life by becoming food for the flora and fauna.

3. Ask what the students learned from this story.
    a. Lead them to the answer that "This shows how we are deeply connected within the ecosystem. Everything is connected!"
    b. You should probe them and think about what that word is called and what it means to them.
        i. Answer: ecosystem
4. Start a poster project.
    a. Students will get to choose different types of salmon to draw/color.
    b. They will glue their drawing on a poster with the bioswale and river added in.
    c. Ask the students why the bioswale is important.
        i. If the students are not able to get the answer, explain why the bioswale is important
        ii. Ask why we want to conserve these animals? Why is it important that these animals survive?
            1. Answers to this question may vary
            2. OR
            3. Create your own salmon – Students will each color their own salmon cutout and then glue it on a piece of construction paper. Students will then give the salmon human characteristics (brave, kind, funny...) and name their salmon.
5. Share what the different kinds of salmon are. See page 8 of the salmon coloring book printout.
6. 5^{th}-8^{th}:
7. Play a video showing examples on video of how salmon life cycle looks like. (5 mins).
    a. Possible example video: Life Cycle of the Pacific Salmon - YouTube
    b. Reflect with the students on....
        i. What went on in the cycle
        ii. If they can name the different stages.
8. Go over a PowerPoint Presentation on the salmon life story
    a. Let students guess the different stages to see if they remember what happened in the video
    b. Let students point out things
        i. Ask questions:
            1. Where is the yolk?
            2. Can you see the mouth?
            3. Etc.

9. Play an online game: https://americanindian.si.edu/nk360/pnw-history-culture/pnw1-salmon/
    a. Playing a game of the salmon life cycle
        i. Choose 3 different types of salmon
        ii. Different eggs
    b. Read out the gist
        i. Fact on that salmon
    c. Let them think about the fact & question
    d. Ask them what the options means
        i. Of the question
        ii. Game: optional
10. Have cut out of animals and plants for kids to color and put on a giant piece of paper. Explain that this is our ecosystem and ask about the different things in the ecosystem.
    a. Salmon
    b. Fly
    c. Seaweed
    d. Etc.

OUTSIDE:

(K-1st/2nd-4th)

1. Kids draw on PPP road/parking lot with chalk about animals (20 mins)
    a. Favorite one
    b. One that was interesting to them
2. Take the kids outside and meet in a socially distanced circle and have a picture of different fish.
    a. They will try to guess which fish that is
    b. Give them hints along the way and repeat.
    c. Give them a reward from the reward.
3. Have students guess what kind of salmon you are thinking of..
4. Egg salmon activity...where do the eggs come from? Where do the salmon lay eggs? Why do salmon lay eggs.
    a. Use the water beads from the previous lesson and hide them throughout the garden and see if students can find where the water beads (eggs) are.
        i. Tip: have the water beads in containers so that they don't go into our stormwater streams (water beads biodegrade in 10 years which is a long time!
        ii. Remember that salmon eggs are usually laid under trees for shade.
        iii. Explain to students that these are not REAL salmon eggs but are what real salmon eggs might look like.

5th - 8th Salmon life cycle project

a. Create the salmon life cycle as a group
b. Students reenact the different cycles of salmon
c. Everyone will have a part to complete
d. All parts will be put together and presented by the students

2. Alternatively: Drawing the whole life cycle in of the salmon with chalk outside instead of Kids draw on PPP road/parking lot with chalk about animals
    a. Favorite one
    b. One that was interesting to them

Supplementary Activities/ Lesson extensions:

(K-1st) Have a fish song and dance video

(2nd-4th) Reading a book - Audio book

(5th-8th) Introduce these students to the next week's topic. Plants & soil! What do the students know already?

Play salmon life cycle videos

Soil

NGSS (Next Generation Science Standards (k-12 science content standards):

1. Asking questions (for science) and defining problems (for engineering)

2. Developing and using models

8. Obtaining, evaluating, and communicating information

Topic Keywords: SOIL COMPOSITION, COMPOST, CREATING COMPOST, WORM BIN, FOOD DIGESTER

Content Background: The students should be aware of salmon and marine life from the previous week, as well as stormwater, pollution, and displacement from previous weeks. Students may have a real life understanding of soil but not a formal education of what is inside soil and how to use soil to create effective plants. Students may also need some help understanding what compost is and how to use the compost effectively for plants.

Learning target:

ALL GRADES:

- Students will learn about the different soils for different plants/environments, how to make compost, and how to create effective soils for plants.

Activity Overview: The students will observe how the different ways various soils interact with their environment.

Presentation(s)/Printout(s):

Video:

Compost video: Make the Most of Compost! - YouTube , https://www.youtube.com/watch?v=8PElbErayZg&ab_channel=compostinghome

Flashcards:

Compost Flashcards bin system: https://worldrelief.sharepoint.com/:w:/s/sea/Ec-v91GFETRCkG8lo_ooTJwBUq_0_y4XcWZDDn8m4PTAkg?e=oxq9Cl

Compost flashcards worm bin: https://worldrelief.sharepoint.com/:w:/s/sea/Eb8aywY26J1Jt6jY7WkeQtQBNvxi-oGMZ5DScODosZaShQ?e=jNc3SN

Food digester: https://worldrelief.sharepoint.com/:w:/s/sea/EdGLUdbAvUFLkAXF34tj1-IB-mkM-UiD9g077wi4Vjuj6g?e=RoXtW8

Materials:

ALL GRADES:

- Soil Jar
  - Sand
  - Silt
  - Clay
  - Water
- Newspaper
- Wood
- Monitor

Outside:

1. Plants
2. Leaves
3. Potting soil - Black Gold soil
4. Garden soil
5. Gravel
6. Sand

K-1st: White board

2nd-4th:

- Everything in all grades
- Flashcards

5th-8th:

- Everything in all grades
- Whiteboard

Vocab:

- Soil – a complex mixture of rock fragments, organic material, air and water
- Nutrients – substance essential for growth. Nitrogen, phosphorus, and potassium are key nutrients.
- Fertile – capable of producing abundant crops or vegetation
- Sand – the largest soil particle size
- Silt – the medium-sized soil particle size

- Clay – the smallest soil particle size

Students don't need to say the definition as described above but should know what the words look like.

Preparation:

ALL GRADES:

- Create a soil jar with different layers of material. Add water and shake thoroughly, should happen instantly.
    - First layer: Sand
    - Second layer: Silt
    - Third layer: Clay
- Have cups of sand, silt, and clay so that students can touch the different kinds.

Activity:

Age Adjustments:

Inside**:**

K-1st

1. Show a video about soil and compost. (2 1/2 mins)
    a. https://www.youtube.com/watch?v=8PElbErayZg&ab_channel=compostinghome
    b. Ask follow up question about what the students learned
2. Explain what soil consists of. (5 mins)
    a. Show the jar of soil. Allow the kids to pass along the jar of soil.
    b. Explain that this is... Sand, Silt, Clay. Have students reiterate the words back to you.
3. Kids touch the different soils laid out.
    a. Sand, Silt, Clay
    b. Ask follow up questions about what they notice, etc.
4. Explain compost to students (10 mins)
    a. The students are drawing on a whiteboard on how to make compost (BIN SYSTEM)
        i. You need the greens and the browns
            1. Hold up newspaper and wood and explain these as brown
            2. Hold up plants and leaves and explain these as greens
            3. Then the sun melts the greens and browns and we mix them together.

4. This is really good for our plants because they can drink up the greens and browns.

b. The students are drawing on a whiteboard on how to make compost (WORM BIN)
    1. Did you also know that we can make compost using worms? Refer to worm bin.
    2. Worms eat the greens and then they poop our compost.

c. The students are drawing on a whiteboard on how to make compost (BACTERIA BIN)
    1. Food can go bad, then bacteria start to come and eat things. That's why when food goes bad in your house, you throw them away.

5. Like the video, explain that these students need soil and compost to create good places for plants. You cannot simply have compost. (5 mins)
6. Compost dance (10 mins) Wiggle like a worm: https://www.youtube.com/watch?v=OdJE5itVZfw&ab_channel=MissJessica%27sWorld-WhereKidsLearnNewThings

2nd-4th

1. Show students soil (10 mins)
    a. Show the jar of soil. Allow the kids to pass along the jar of soil.
    b. Have students try to guess what is in the jar.
        i. If they are not able to guess, explain that this is... Sand, Silt, Clay.
            1. Ask why there might be different types of soil.
                a. Different plants grow in different soil, u also have to think about how much it rains. Remember the water cycle?
                b. What is soil?
                c. What does it look like?
                d. What does it feel like?
                e. Can soil look and feel different?
                f. Describe soil in the desert.
                g. Describe soil in a swamp.
                h. What is soil like in a forest or a farm field?
            2. Sand is the largest particle size. Since it is large, it has excellent drainage properties. However, not all plants grow well in such well-drained soils. Sand also has different nutrient holding capacities, as it has less surface area than smaller particle sizes. Because of this, it is possible to run into nutrient deficiencies on these types of soils more often.

3. Silt is a medium particle size. It drains fairly well, and holds nutrients fairly well. You could think of it like the baby bear in the story of Goldilocks.
4. Clay is the smallest particle size. Because of its small size, it retains water much more than the other particle sizes. However, since there is much more surface area of particles within the soil, there is a higher nutrient holding capacity.
5. There is a mixture of the 3 in most areas.

ii. Video : https://m.youtube.com/watch?v=ownoP8e7Tl8&feature=youtu.be

1. Where do these soils come from?
    a. Different places. Sand=Beach, Silt=Rain Garden, Clay = We actually have a lot of clay in Kent if you dig very deep (~12 ft)
2. Do the students recognize where these soils might come from?
    a. In their home country, did they have a soil like this? What did they use it for?

2. Kids touch the different soils laid out (10 minutes)
    a. Sand, Silt, Clay
    b. Ask follow up questions about what they notice, etc.
3. Explain to students what compost is. (30 minutes)
    a. Start with the difference between soil and compost
    b. Show photo of soil & compost and see if they notice any differences.
        1. Compost is very similar to soil except compost is made of rotten organic materials. Compost is added to soil to make it nutritious.
    c. Have students guess how we make compost based on how we do it at paradise parking plots. What are the three different ways?
        i. Using flashcards explain how compost is made (BIN SYSTEM)
            1. You need the greens and the browns
                a. Hold up newspaper and wood and explain these as brown
                b. Hold up plants and leaves and explain these as greens
                c. Then the sun melts the greens and browns and we mix them together.
                d. This is really good for our plants because they can drink up the greens and browns.
        ii. Using flashcards explain how to make compost (WORM BIN)
            1. Did you also know that we can make compost using worms? Refer to worm bin.
            2. Worms eat the greens and then they poop our compost.

iii. Using flashcards explain how to make compost (BACTERIA BIN)
1. Food can go bad, then bacteria start to come and eat things. That's why when food goes bad in your house, you throw them away.

4. Why do we need both soil and compost for plants? (2-5 mins)
   a. Why can't we just use compost?
      i. Have students come to the conclusion that compost is too nutrient (too yummy) and when you eat lots of sugar (you feel sick afterwards). So, you need the soil and the compost.
      ii. Building our own compost bin
      iii. Students will have a big empty bin. They'll add soil, twigs and dried leaves, some grass or greens and food peels. Mix it together and we have our own compost!

5th-8th

1. Show students soil (10 minutes)
   a. Show soil jar
   b. Classifying different component of soils
      i. The... Sand, Silt, and Clay
   c. Have students touch each soil type and use describing words for each component
      i. Silty, Sandy, Gravely, etc.
2. Talk about drainage rates. If the students are struggling, play video on drainage rates. (10 minutes)
   a. Why is the sand on the top? Why is clay on the bottom?
   b. Sand drains faster! Big grains, so water goes through them
3. Explain to students what compost is. (20 minutes)
   a. Have students guess how we make compost based on how we do it at paradise parking plots. What are the three different ways?
   b. Using white board, show students compost is made (BIN SYSTEM)
      i. You need the greens and the browns
         1. Hold up newspaper and wood and explain these as brown
         2. Hold up plants and leaves and explain these as greens
         3. Then the sun melts the greens and browns and we mix them together.
         4. This is really good for our plants because they can drink up the greens and browns.
         5. If there are no physical examples draw it out
   c. Using white board, show students compost is made (WORM BIN)

1. Did you also know that we can make compost using worms? Refer to worm bin.
2. Worms eat the greens and then they poop our compost.

d. Using white board, show students compost is made (BACTERIA BIN)
1. Food can go bad, then bacteria start to come and eat things. That's why when food goes bad in your house, you throw them away.

4. Ask why do we need soil & compost. Why can't we just use compost? (2 minutes)
   a. Have students come to the conclusion that compost is too nutrient (too yummy) and when you eat lots of sugar (you feel sick afterwards). So, you need the soil and the compost.

Outside**:**

1. Have students make their own compost (22.5 minutes):
   a. Jog their memory on how to make the bin compost
   b. Having different stages of compost
   c. Composition of compost
      i. Sticks & greens
   d. Complete compost
   e. Potting gloves
2. Show students the worm compost bin and food digester cone. (10 mins)
   a. Ask if students can find a worm.
   b. What does the worm do?
   c. What can we put in the worm bin?
3. Then compare and contrast different types of soils near the area with the wall of plants. (5 minutes)
   i. Potting soil - Black Gold soil
   ii. Garden soil
   iii. Gravel
   iv. Sand

Supplementary Activities/ Lesson extensions:

Compost & Soil:

- Give them time to draw and/or draw what they learn out inside journals.

Draw plants they see around the garden using chalk

Make plants and nature structures using play dough

Plants

NGSS (Next Generation Science Standards (k-12 science content standards):

1. Asking questions (for science) and defining problems (for engineering)

2. Developing and using models

8. Obtaining, evaluating, and communicating information

Topic Keywords: VEGETABLES, FRUITS, NATIVE PLANTS, RAIN GARDEN, PHOTOSYNTHESIS

Content Background: The students should have some understanding of soil and compost from the Tuesday lesson of this week. Students should also be aware of pollution, stormwater, and how Paradise Parking Plots helps out marine life by preventing pollution. Students should also be aware that marine life and the land that we are standing on are built of refugee & immigrants.

Learning target:

K-1st: Students will be able to identify some plants, why we need plants, and what is needed for the plants to grow.

2nd-4th: Students will be able to identify plant types, why we need plants, and what is needed for the plants to grow.

5-8th: Students will be able to identify some plants, why we need plants, and what is needed for the plants to grow.

Activity Overview: Students will identify different vegetables, native plants, find out what plants need in order to grow and that different regions grow different plants based on what is most available.

Presentation(s)/Print out(s):

K-1st Presentation: https://worldrelief.sharepoint.com/:p:/s/sea/EZ-YjmvTKulGlwHmOUyawcoByriO4jdQ6V30Mb2AJTn41A?e=WpPd54

Flashcards:

https://worldrelief.sharepoint.com/:p:/s/sea/EXMCMwskHatAhzJw8mC-7YYBVwlByjAejqwOwR-BYYs5-w?e=t7niZF

https://worldrelief-my.sharepoint.com/:p:/r/personal/nkuria_wr_org/_layouts/15/Doc.aspx?sourcedoc=%7B6476DC9E-66CA-44F7-92F9-

33A1BF152AE4%7D&file=plant%20presentation%20.pptx&wdOrigin=OFFICECOM-WEB.MAIN.REC&ct=1628131299326&action=edit&mobileredirect=true

https://worldrelief.sharepoint.com/:b:/s/sea/ESe192rbfJNBrFtmMkRUI-sBhQ76BRf4j8HFOygzED-zKw?e=ajGQpM

Video:

https://www.youtube.com/watch?v=Yxs7P7LWzDg

Print outs:

Plant-Life-Cycle-for-Kids-Stages-Diagram.jpg (842×900) (sciencefacts.net)

RFS-Lesson-3.png (864×864) (filamentlearning.com)

Resources:

Materials:

- All grades: Real plants
    - Carrots
    - Peas
    - Lettuce
    - Spinach
    - Potato
    - Tape
    - Monitor
    - Flyswatter

(5^{h} -$8^{th)}$

    - The hologram thing
    - Whiteboard
    - Picture of the plant life cycle

(2^{nd}-4^{th})

Monitor for the videos

Flashcards

VOCAB: Any vegetable or garden plant

Plants that are also in the rain gardens for Paradise Parking Plots:

-Flowering red current

-nootka rose

-peafruited rose

-salmon berry

-snowberry

-red osier dogwood

Native plant I.D. Flashcards
https://worldrelief.sharepoint.com/:b:/s/sea/ESe192rbfJNBrFtmMkRUI-sBhQ76BRf4j8HFOygzED-zKw?e=ajGQpM

Preparation: Have the monitors and presentations ready.

Activity:

Age Adjustments:

Inside:

K-1st:

1. Play videos linked above (5 mins)
2. Ask students if they could identify the following plants (These plants will be real and bought from grocery store). Have students repeat the different plants to the teacher each time. (5-10 mins) (First group)
    a. Carrot
    b. Peas
    c. Lettuce
    d. Spinach

    (Any common grocery plant will do.)
3. Native plant identification (10 mins)
    a. Show the different native plants with flashcards and have students name the different plants.
4. Ask students why we need plants? (2 mins)
    a. Answer: We eat them!...What else?
5. What is needed for plants to grow? (2 mins)
    a. Water and sun. Remember the water cycle?
6. Play flyswatter game (10-15 mins) * we did not use this part of the lesson plan but it will be useful.
    a. When instructor says the name of a plant, the kids will flyswat the flashcard with the plant.

   b. Make sure to tape the flashcards onto the table.
7. Play a dance party song related to plants (5 mins)

2nd-4th:

1. Ask students what plants they know. What different plants and vegetables do they eat at home?
2. Go over the different types of fruits & vegetable Presentation. Have students repeat the different fruits & vegetables.
3. Have each student hold a flashcard of a vegetable over their head and have the other students describe the item without saying it. This should be a fun game and see who gets their item first. (10 mins)
4. Ask students why we need plants? (5 mins).
   a. Answer: We eat them! Yes...but what else? Answer: Insects need them! They give us air. How do they give us air? Talk about photosynthesis and explain it.
5. What is needed for plants to grow? (2 mins)
   a. Answer: Water and sun. Remember the water cycle?
6. Bring out the U.S. map, what grows here?
   a. Show New Mexico (cactus state) vs Idaho (potato state) vs Washington (apple state) vs California (almond state)
   b. Mention the difference of water
7. Native plant identification. (Students don't need to memorize these, we can use when we are outside)
   a. Show the different plants with flashcards

5-8th:

1. Diagram of the different categories of plants
   a. Root
   b. Vegetable
   c. Fruits
2. Ask students, what is the difference between root plants, garden plants, fruits, etc.
   a. Show a PowerPoint or visuals showing the difference.
   b. Allow students to guess what plants could be in each category.
3. What do plants need?
   a. Let student guess.
   b. Sun & Water.
   c. Have them reiterate the water cycle!
   d. Plants can also soak up pollution, refer to the rain garden plants. Like evaporations, plants can transpire, which means they can bring water through the plant and then into the air.

4. Video / hologram of plants to spark interest.
    a. Timelapse of plants growing.
    b. Bring out a whiteboard, and have students guess what a plant life cycle may be.
    c. Show a picture of the plant life cycle when there are no more ideas of what the cycle could be.
5. If regular plants are too easy: Rain Garden plant identification
    a. Show the different plants with the flashcards

OUTSIDE:

- K-1st: (Garden Plots below) Morning group: Have students go to a garden plot and try to name the garden plants.
    - Afternoon group: Native plant identification
        - Ask the students if they can identify the plant. Go around the garden and see how many plants they can identify and locate.
- 2-4th: (Garden Plots above) Students go to garden plots and identify what each type of plant is – Root, Veggie or Fruit
    - Native plant identification
        - Ask the students if they can identify the plant
- 5-8th: (Garden Plots below)
    - Have students go to a garden plot and try to name the category garden plants.
    - Rain Garden plants
        - Identify rain garden plants
        - Compare rain garden plants vs garden plants
            - Rain garden: Water loving
            - Garden plants: We eat them!
                - Eating plants – Pulling them off the stem

Supplementary Activities/ Lesson extensions:

- Go to the rain garden for the native plants and show students the plants they know from the native plant I.D. flashcards.
    - Tip: Based on the summer season, the plants shown will not be easily identifiable. You will need to show the students where the plant is and tell students the name of the plant. Then the students can look for the name on the flashcard.

Supplemental 2-4th:

- Go over Presentation about the different types of vegetables.
- Learn Roots & Stem & Leaves song – From Rainer Beach Farm

- (Play a game of memory with the flashcards) Do a card matching game with flashcards. Allow the kids to take turns on flipping the flashcard. (10-15 mins)
    - Word to picture.
    - Carrot to vegetable type.
    - Radish to root type.

Garden Creatures

NGSS (Next Generation Science Standards (k-12 science content standards):

2. Developing and using models

3. Planning and carrying out investigations

4. Analyzing and interpreting data

5. Using mathematics and computational thinking

8. Obtaining, evaluating, and communicating information

Topic Keywords: INSECTS, LIFE CYCLE OF AN INSECT, IDENITFYING PARTS OF AN INSECT, POLLINATION, SOUNDS OF INSECTS

Content Background: The students will know about displacement. They know about the water cycle and water. They have gone through marine life and salmon (they know that there are different types of an animal). The kids know about the different plants, soil and compost. They have a good understanding between the interaction of the insects and plants.

Learning target:

K-1st:

Students should know what insects are, the different parts, and the sounds of the insect.

2nd-4th:

Students should know what insects are, identify different types of insects, why insects are important to us, and what insects need to survive.

5-8th:

Students should know what are insects, why they are important (because of pollination & how they affect humans), and the different groups of insects (and to differentiate them).

Activity Overview: Students will jog their memory on what they already know about insects, inspect an insect demonstration and answer questions about insect parts, explore the life cycle of insects, converse with partners and share the importance of insects. They will also look for insects outside through a scavenger hunt provided, and share specific insect sounds as well as naming those insects.

Presentation(s)/Printout(s):

<u>General Presentation:</u>

https://docs.google.com/presentation/d/1sTdF6SGFh5oKzVQuyRO6NtbFWQrUaTaY_1I_Fj-8S30/edit#slide=id.p

K-1st Presentation:

https://worldrelief.sharepoint.com/:p:/s/sea/EckGDunjV5xBowSOgwvORS4BSxZGqU4eyg4xeX2f54NinQ?e=uu07Ip

Insect Flashcards:
https://worldrelief.sharepoint.com/:w:/s/sea/EU6Z4kRhkpFKvp10hU83G98B6LoCqLcUThkvUVhd-bdHQg?e=Qnfwvd&CID=1EA815F2-C11F-4A27-B743-9026FEA7576B&wdLOR=cBFC67A9D-099A-4EAF-BC07-1A7C3646CBC9

Printouts:

Insect scavenger hunt:
https://worldrelief.sharepoint.com/:b:/s/sea/EZqAClqY6S5BrWa6rgZAm7IBAqB-bDaQCbuYlKOi4ilu_w?e=659dmp

Butterfly life cycle:
https://worldrelief.sharepoint.com/:i:/s/sea/EVSgsh2H72FKooyoHt5gf8YBBdzDEOdRwS6cwUXcOSvW7w?e=KQQAaA

Ladybug life cycle:
https://worldrelief.sharepoint.com/:i:/s/sea/EZidtwPiIdVEiyWudvyBzx4BHKk8I4b_PW6_zwGA_qs9Fw?e=yXdEWd

Mosquito life cycle:
https://worldrelief.sharepoint.com/:i:/s/sea/EQLpe8ZbYzBPs88GbjrtX7EB14dPYb6-oA6R5MyrHtjyCg?e=QD2KNS

Parts of an insect:
https://worldrelief.sharepoint.com/:i:/s/sea/EZVRyKujGZdOokQXghNqTdwBf0_eYVqEmjhDFl7-P9rz1g?e=oSCOVx

Parts of an insect worksheet:
https://worldrelief.sharepoint.com/:i:/s/sea/EeMy5w8VjMNMiq5u6gCfm9YBO1KK4Ym9eyyEuWTqEZR0ZA?e=vhVhef

Videos:

Magic school bus, Butterfly and Bog Beast: https://www.youtube.com/watch?v=-eJacDMwGtQ&ab_channel=MichaelWeaver

Insects and life cycles:
https://www.youtube.com/watch?v=OWHegREkHjM&ab_channel=ScopeTV

Materials:

- 15 Play-Doh
- Magnifying glass
- 3 containers
- 3 live insects
    - Ant
    - Rolly Polly
    - White Moth
- Whiteboard
- Tablet (ex. iPad)/Monitor
- Print out: Insect parts diagram
    - 5-8th friendly
- Print out: Life cycle of insect infographic
    - K-1st friendly
    - 2nd-4th friendly
- Video: Magic school bus video about insects

Vocab: Insects in the Pacific Northwest

- Families: Ladybugs, Beetles, flies, butterflies, bees/wasps (for older group)
- Categories: Biting animals, Aphids, Parasitic
- Ants
- Worms
- Rolly Polly/Pill bugs
- White cabbage moth
- Ladybugs eat Aphids
- Bees (All bees)

Preparation:

- Gather materials
- Load up presentations
- Grab containers to create the insect demonstrations.
    - Find insects throughout Paradise Parking Plots to put in the containers.
    - The insects we used (in different containers) were:
        - Rolly Polly/Pill bugs
        - Ants
        - Worms

Activity:

BEFORE THE LESSON STARTS: Ask if the students are scared of spiders or insects.

ALTERNATIVE ACTIVITY IF STUDENT HATES INSECTS: Floaters would give personal attention to the student's needs

Age Adjustments:

Inside:

K-1st:

1. Ask students what insects they know.
2. Show students the demonstration containers.
    a. Ask students how many legs do the insects have?
3. Play video about "what are insects"
    a. All About Insects for Children: Bees, Butterflies, Ladybugs, Ants and Flies for Kids - FreeSchool - YouTube
    b. Ask students what insects are and explain the definition to them.
4. Why are insects important?
    a. Jog their memory about plants and briefly explain that insects are important for helping spread these plants around (pollination).
5. DANCE PARTY: Heads/shoulders/Knees/Toes song but for insects. *(On the presentation)* *K-1st*
    a. Play-Doh. Create their own insect
        i. Mandibles
        ii. Abdomen
        iii. Thorax
6. Play videos or emulate the sound of these insects to promote auditory skills.
    a. Bees
    b. Ants
    c. Worms
    d. Rolly Polly/Pill bugs
    e. White moth
    f. Ladybugs
    g. Aphids
    h. EX. Cicadas, Crickets, Mosquitoes, Flies, Bumblebees. Contrasting ways that we think of animals. Visual, chemical, light. - Fireflies
7. Explain that insects have life cycles. They are born, live, grow up, and die like people. Show the different life cycle of a insects using the print-out diagrams or on a monitor.
    a. Butterfly
    b. Ladybugs
8. Flyswatter game using the insect flashcards

a. Have students help you tape down insects onto the table and hand each student a flyswatter.
b. Then say an insect name aloud, and explain that students should use the flyswatter to softly hit the insect that is taped on the table.
c. Give students a prize for whoever taps most insects first.

2nd-4th:

1. Ask students what insects they know. (10 mins)
2. Play the magic school bus video about insects
    a. Ask students what insects are.
    b. Ask students why are insects important
        i. Explain that they eat plants
        ii. They also pollinate
3. Show students the insect containers.
    a. Count with the students on how many legs are on the insects and ask why the insects have 6 legs?
    b. Ask students why are the insects are fuzzy and encourage questions.
4. Use Play-Doh and create insect parts
    a. Mandibles
    b. Abdomen
    c. Thorax
5. Each student is an insect and have to find the candy hidden around the room to replicate what pollution is like. (10 mins)
        i. Each student is a different insect
    b. Ask students what they were doing.
    c. Ask students why is pollination important and go into what pollination is.
6. Share the life cycle of insects
    a. Butterfly
    b. Mosquito
7. Go over flashcards with different insects on them. Have students name each insect.

5-8th:

1. Ask students what insects they know.
2. Go over the quick presentation on insects.
    a. Ask a student to draw insects and garden animals out on a white board (label as well)
        i. Worm
            1. Indicates of good soil if there is a lot if not indicates poor soil
            2. Adding organic matter that helps

ii. Butterfly
    1. We kill the white ones
iii. Bees
    1. Help pollinate the plants (especially the flowers)
iv. Spider
    1. Help keep population of insects down
v. Birds
    1. Likes to eat slugs and snails etc. Help keep pests and other garden creature under control
vi. Etc.

b. Ask students why are insects important?
    i. Have students guess the answer or tell them
    ii. Answer: insects pollinate & eat our crops & eat each other!

3. Have students create a definition of insect vs animal vs bug
    a. Comparison
        i. Make table and let kids guess things out
        ii. (Give hints to start off)
4. Play the butterfly/insects/animal hologram video
        i. See if students can figure out which one is classified as an insect and which one is not
5. Show students the insect parts diagrams
    a. Insect parts
        i. Main parts (mandible, thorax etc. (ones all have in common if not most)
    b. Do other garden animals if there is time (Birds, butterfly, bees etc.)
6. Show students the insect container.
    a. Explain the insect
    b. Show insect parts on each insect
7. Explain that insects can be put into different categories. If there is time, have students arrange insect flashcards into groups.
    a. Biting animals
    b. Aphids
        i. Parasitic

<u>Outside:</u>

ALL STUDENTS: Ask students to vote on whether they would like to do an insect scavenger hunt or explore the garden.

OPTION 1:

- INSECT SCAVENGER HUNT! (Bingo's style)

- Let the kids go out and find insects and explore the insect in their natural environment.

OPTION 2:

- Garden plots
  - This insect eats this plant
  - Student touches plant and then another plant, therefore they are the pollinator
- Pollination Area
  - What are the most common insects & in what area?
  - Spot insects
    - What can you find?
- Worm bin, compost.
  - Food Scraps.
  - Revisit
  - How the insects help the environment

Supplementary Activities/ Lesson extensions:

K-1st:

- Printing out flashcards and categorizing them by family
- Explain that there are different families of insects like the students have different families: Ladybugs, Beetles, flies, butterflies, bees/wasps
  - Explain the different families

2-4th:

- Learn the lyrics & dance for head, thorax & abdomen song.

5-8th:

- Pictionary, can students guess the insect?
- Ask: Why do insects displace?
  - Natural balance of insects killing each other. Problem and answer activity.

Alternative Activity:

PREP: 6 hours before or more, leave a pile of dirt out (insects love this environment)

- Have students look through the microscope to see what insects they can find.

Garden Wrap Up*

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*(1) This activity is outside only. (2) Never practiced nor executed through summer camp.

NGSS (Next Generation Science Standards (k-12 science content standards):

2. Developing and using models

6. Constructing explanations (for science) and designing solutions (for engineering)

8. Obtaining, evaluating, and communicating information

Topic Keywords: CAMP WRAP UP, CISTERNS, BIOSWALE

Content Background: Students have gone through all of the weeks and learned about refugees, immigrants, Coast Salish tribes, watersheds, stormwater, stormwater solutions, marine life, salmon, soil, plants, and garden creatures (mainly insects).

Learning Target: Students will reaffirm their understanding in water movement, insect parts, rain garden plants/garden plants, what marine life needs to survive.

Activity Overview: Students will rotate through stations outside and jog their memory on what they have learned throughout camp and making connections between learned topics.

Materials:

- PVC Pipes
- Speaker
- Flashcards of rain garden plants
- Paper & colored pencils
- Marine animals (from week 3)

Vocab: N/A

Preparation:

- Set up activity stations

Activity:

Age Adjustments:

<u>Outside:</u>

- Stations (10 minutes each, age groups)
    - Cisterns
        - Put students into teams

- One instructor/intern/floater will fill in for 3rd person
- Using the PVC pipes, explain to students that water should go from one area to the other with pipes.

If it is hot: Spray some water on the students when walking from cistern to compost area.

- Compost
  - K-1ST: Students will do a worm dance (5 minutes) they learned from their teachers and add in an insect part dance (head/shoulders/knees/toes) (5 minutes)
  - 2ND-4TH: Students will create an insect dance (5 minutes) + present dance (5 minutes)
  - 5th-8th : Students will do a mini scavenger hunt
    - The theme will be compost
- Rain Garden
  - Ask students questions about rain gardens and how they work. Have them come to the conclusion that rain gardens need plants.
  - Use flashcards of rain gardens plants to further their knowledge of plants.
  - K-1st: Will do a different activity at the garden plots.
    - The students will draw plants that they see in the area.
- IF BIOWSWALE IS COMPLETED, BIOSWALE. ELSE The area with plants/hügelkultur bin area
  - Hide marine animals around the bioswale. Otherwise, put marine animal in a bowl of water and hide them in the hügelkultur bin area.

- Have 10 minutes at the end to say bye to the kids

Supplementary Activities/ Lesson extensions: N/A