Week 4

Spring Daze

Challenge

Create your own bird tune! For inspiration, sit outside for 10 minutes and listen for bird calls around you. Try your hand at making your own tune by whistling, using household or natural items as instruments to create a beat, clicking your tongue, or tapping your fingers! Share your recordings with us on Instagram or Facebook by using the hashtag #SOLACEchallenge and tagging @swanerpreserve. You can also send a recording of your completed challenge to swanerecocenter@usu.edu!

Kahoot

This week's Kahoot quiz explores signs of spring! Our Kahoot quizzes require reading, and are targeted toward 3rd-5th graders, but younger youth should be able to complete them with the help of an adult or an older sibling. Kahoot quizzes are intended to test your child's knowledge, and to help them learn new information!

Kahoot is an online learning platform that allows educators to create quizzes, then engage with their students through their mobile device, tablet, or computer. Your child will need access to the internet for this activity. You can access the quiz here or download the Kahoot app then use the game pin 03094342.

Story Time

This week's story is Fletcher and the Springtime Blossoms by Julia Rawlinson. Check out our recorded reading of this story here! Each week the story will be uploaded to YouTube to view anytime, anywhere.

This week's activities include:

Craft	Cloud Viewer
Design Challenge	Design a Kite
Outdoor Activity	Biodiversity in Your Backyard
Science Experiment	Best Bubble Solution

Craft: Cloud Viewer

Head outside and look up! What do you see? In this activity, you'll create your own cloud viewer, then use it to explore different types of clouds in the sky.

Time

15 – 45 minutes

Materials

- Thin cardboard (like from a cereal box)
- Examples of different types of clouds
- Cotton balls, white paper, crayons, or paint to create your clouds
- Stick
- Scissors
- Glue or tape

Procedure

1. With adult help, cut your thin cardboard into a picture frame shape. The frame should be wide enough that pictures of different types of clouds can be glued on with labels. Make sure the hole in the middle is a large viewing field. Here's an example.
2. Explore different types of clouds, and pick which ones you'd like to include in your viewer. Make sure to include clouds that form at low, medium, and high elevations. You can also include unusual clouds, if you'd like. Here are some ideas of common clouds in Utah:
    - Cirrus
    - Cirrocumulus
    - Cirrostratus
    - Altocumulus
    - Altostratus
    - Stratus
    - Stratocumulus
    - Nimbostratus
    - Cumulus
    - Cumulonimbus
    - Lenticular
    - Contrails
3. Create your clouds using crayons, paint, cotton balls, or other creative materials. You can also print pictures of the clouds, or trace them onto paper using a mobile device. You can either put them directly on your frame, or create them on smaller paper squares, then glue or tape them to the frame. Be sure to arrange low elevation clouds at the bottom, medium elevation clouds in the middle, and high elevation clouds at the top.
4. Make sure to label the different types of clouds you included.
5. Tape or glue a stick at the bottom to hold your cloud viewer. You can use a popsicle stick, a wooden dowel, or a stick you find outside in your neighborhood or yard!
6. Head outside to test out your cloud window. How many clouds can you identify?

Guiding Questions

- Do all clouds look the same?
- Do you think all clouds form the same way? What are some different factors that might affect how a cloud forms?
- What clouds would you like to include on your cloud viewer?
- What do you want to make your clouds from? How can you make sure each of the clouds look scientifically accurate?
- Which kinds of clouds have you seen the most often?
- What kinds of clouds do you think we might see today?

Extended Learning

- Create cloud pictures at home, then quiz a family member to see if they can figure out what kinds of clouds you created, using your cloud viewer!
- Take your cloud viewer any time you head on a walk or into the backyard to play—do you notice different clouds depending on where you are, the time of day, the weather, etc.?

Design Challenge: Design a Kite

Breezy spring days and sunshine are the perfect combination for kite flying! In this design challenge, your child can use household items to design and make their very own kite. The engineering design process will be explored as they test and refine their kite until it takes flight!

Time Frame

1 hour

Materials

- Newspaper, plastic film, paper, or other lightweight material
- Wooden dowels, bamboo skewers, straws, or sticks
- Masking tape or glue
- String
- Yarn/Ribbon
- Scissors
- Paper
- Pencil

Procedure

1. **Ask**
    - What shapes and sizes of kites have I seen before? Check out some inspiration from NASA's Glenn Research Center.
    - What types of materials would be good for flying?
    - What are the necessary parts of kites? What can I add? For an explanation of kite parts, check out Kites in the Classroom.
2. **Imagine**
    - Brainstorm a few ideas of how you want your kite to look. Try sketching out your ideas on a piece of paper, making sure to label the parts of the kite. What materials could you use for these different parts?
3. **Create**
    - Pick your favorite idea and begin collecting the supplies to make your first prototype. A prototype is a special type of working model used to test new design ideas.
    - Begin creating your kite! Know that changing plans as you're building is okay. Engineers in the real world commonly make refinements to their prototypes, or sometimes have to entirely start over when things don't go as planned!
4. **Test**
    - Time to take your kite outside to test it! The best weather to fly your kite in is a soft to moderate breeze.
    - Pay close attention to what works and what needs adjustments. Make note of these on a piece of paper.

5. **Refine**
    - If things didn't go as planned, head back inside to try again! Refer to the observations you wrote down as you were testing the first time.
    - Think about what didn't work and why. What adjustments can you make to your prototype? It might be helpful to review with an adult.
6. **Test (again!)**
    - With your refinements to your prototype, head outside to try again!
    - Did the adjustments you made help with the flight of your kite? Why or why not?
    - Repeat the steps of testing and refining until you are satisfied with your prototype.
7. **Explain**
    - Once you have your final version of your kite prototype, share your experience with someone! Walk them through your design process – discuss what steps were challenging, what adjustments you had to make, etc.
    - Enjoy flying your kite with others!

Guiding Questions

- What shape will your kite be? How will this help it fly?
- What are the different parts of a kite?
- Why do you need to use lightweight materials on your kite?
- How many tails will your kite have? Would it fly without a tail?
- Why do engineers create prototypes? Do you think you'll need to make changes to your kite once it's finished?
- What do you expect will happen with your first test flight?

Extended Learning

- Research the physics behind kite flying. How do the following key terms impact flight?
    - Lift
    - Drag
    - Gravity
    - Thrust
- Try a different kite design! Go through the engineering design process again to create your second kite. Compare how the process went – was it easier than the first time? How does your second prototype fly compared to your first?

Outdoor Activity: Biodiversity in your Backyard

What types of plants and animals call your backyard "home?" In this outdoor activity, your child will engage in a "bioblitz" - a timed survey to record all living species within a designated area. By completing a bioblitz, they will discover what types of living organisms are in a given area and understand the importance of biodiversity.

Time Frame

30 min – 1 hour

Materials

- Paper
- Pencil
- Clipboard
- Magnifying glass (optional)
- iNaturalist app (optional)
- Field guides (optional)
- Camera (optional)

Procedure

1. Create a plan for your bioblitz. Think about the following questions as you are planning:
    - Where do I want to conduct my bioblitz? In my backyard? A garden bed? An open field near my house?
    - How much time do I want to dedicate to completing the bioblitz?
    - Who will be involved in conducting the bioblitz?
2. Identifying the species you discover is a great way to keep track of variety and to help you learn more about them! We recommend using field guides you might have on hand already or downloading the free app, iNaturalist.
3. Gather your supplies and head out to the area you plan to assess! We recommend a piece of paper and pencil to record your observations.
4. Within your defined boundaries, begin recording how many different living organisms you see. You can draw a picture, or write a description or the name of the species if you already know it!
    - Remember to only count one of each species you find (if you see 2 ladybugs, you will only count one!)
    - Every living organism counts! This includes insects, fungi, plants, spiders, animals, and more!
5. If you don't know a specific species, refer to a field guide, upload a picture to iNaturalist where the science community can help you out, or take a pic for reference to do some online research later.
6. Once your planned time is up, it's time to reflect on your observations! If you did the bioblitz with another person, compare your results.

7. Calculate how many ***different*** species of living organisms you discovered. Is the number higher or lower than what you predicted?
8. Discuss what you learned with someone else. Talk about what surprised you and what you want to learn more about!

Guiding Questions

- What is biodiversity? Why is it important?
- What defines something as a "living" organism?
- Why should we include both plants and animals (even insects!) in our count?
- How many species of plants do you think we will find? What about animals?
- What are some of the challenges with trying to identify species? What resources can we use to help us?
- What surprised you during the bioblitz?
- If you were to do a bioblitz in the same area during a different season, would the results be the same? Why or why not?

Extended Learning

- Pick a favorite species of living organism that you discovered during your bioblitz. Research more about it! If it's an animal (remember insects count as animals), discover what it likes to eat, its behavior, etc. If it's a flower, you can research its bloom time, what pollinators visit it, etc.
- Plan to do a larger bioblitz with more people in the future. Coordinate a date, time, and area you want to survey!

Science Activity: Best Bubble Solution

It's bubble time! In this activity your child will create two or more bubble solutions, and collect data to figure out what ingredients create the best bubbles!

Time Frame

30 minutes – 1 hour

Materials

- Measuring cups and spoons
- Water
- Liquid dish soap
- Glycerin
- Corn syrup
- White sugar
- Corn starch
- Other ingredient you want to test in a bubble solution
- Paper
- Pencil
- Stop watch
- Ruler
- Containers for bubble solution
- Bubble blowers—bendable wire, straws, plastic 6-pack holders, pipe cleaners, plastic funnels, etc.

Procedure

1. Discuss what you think makes a good bubble solution. Here are a few vocabulary words to review:
    - Volume – the amount of space something takes up (for example, 1 cup)
    - Surface tension – the ability of molecules to stick to each other. Surface tension is what allows creation of bubbles.
    - Elastic – the ability to stretch
    - Solution – a liquid mixture
2. Make some observations about the different things you have to make your bubble solution. What do you notice about the liquid dish soap, glycerin, corn syrup, sugar, or any other ingredients you've decide to use? What is similar about these ingredients? What is different?
3. Create a table to track your bubble solutions. It may look like the table below:

Ingredient	**Bubble Solution 1**	**Bubble Solution 2**	**Bubble Solution 3**
water			
liquid dish soap			
glycerin			
corn syrup			
white sugar			

4. Mix your bubble solution together. As you mix your solutions, try to keep the volume of each solution the same. Below is an example of our solutions:

Ingredient	Bubble Solution 1	Bubble Solution 2	Bubble Solution 3	Bubble Solution 4
water	1 cup + 1 Tbsp	1 cup	1 cup	1 cup
liquid dish soap	2 Tbsp	2 Tbsp	2 Tbsp	2 Tbsp
glycerin	--	1 Tbsp	--	--
corn syrup	--	--	1 Tbsp	--
white sugar	--	--	--	1 Tbsp

5. Next you will need to decide how you're going to measure which bubble solution is best. Here are some ideas, or you can come up with your own!
    - timing how long bubbles last before they pop
    - measuring to see which solution creates the largest bubbles before they pop
    - counting the number of bubbles each solution produces per blow
6. Create a table to track your trials. It may look like the table below:

Trial #	Bubble Solution 1 (size in cm)	Bubble Solution 2 (size in cm)	Bubble Solution 3 (size in cm)	Bubble Solution 4 (size in cm)
Trial 1				
Trial 2				
Trial 3				

7. Head outside to test your bubble solutions. Practice blowing bubbles before you start your trial.
8. When you feel ready, begin your trial. Make sure to write your results in the table you created.
9. When you complete your trial, analyze the data.

Guiding Questions

- What are some things that you think make a good bubble solution?
- What do you want to use as your bubble blower?
- What ingredients do you want to use in your bubble solutions? Why would you like to use those ingredients?
- How do you want to measure which bubble solution is best?
- What is your hypothesis of which bubble solution is best? Why do you think that?
- Which bubble solution was best, according to your data collection? Why do you think this solution was best?
- Was your hypothesis correct or incorrect?

Extended Learning

- What other ingredients would you like to use to create bubble solution?
- Do you think different bubble solutions would work better with different types of bubble blowers? Create your own bubble blowers from new materials and test it out!
- Try testing out the bubble solutions using a different measurement to collect data. Do you think that using a new method will result in the same or different results?
- Select the best bubble solution. Create a large batch, then package into small bottles and deliver in sanitized bottles to friends or neighbors to enjoy later, with adult permission.