Overview: Environmental Scavenger Hunt

7 Topics, 21 Lessons

Note to teacher/site director:

1. It will take about 40 days for the seeds in Topic 7, Flora Lesson A, to fully bloom. Facilitators might want to move that one to earlier in the club's meetings.
2. Plan to call upon the local, state and community partners identified in item 9 on page 2. We suggest that you contact potential partners early so that they can prepare to assist your activity.

Each lesson below is a 45-minute session that starts with a "setting the stage" question for whole group or small group input followed by a short (3-5 minute) video that further sets the stage. Then, students will work as a team or individually to complete an activity related to the topic at hand. Reflections follow activities. Those can be oral, written, or podcasty or some combination of all the above. Many activities have suggested enrichment components.

1. Topic 1 –Environmental Health
- Lesson A – Nature Walk and Clean-up
- Lesson B – Mimicry
- Lesson C – Invasive Species

2. Topic 2 –Local Environment – Part 1
- Lesson A – Nature Journals
- Lesson B – Where do Rivers Start?
- Lesson C – Kitchen Wetlands

3. Topic 3 –Local Environment – Part 2
- Lesson A – Essential Ogallala Aquifer
- Lesson B – Backyard Compost
- Lesson C – Leave Some for the Fish

4. Topic 4 –Earth Sciences
- Lesson A – Astronomical Navigation
- Lesson B – Star Charts
- Lesson C – Weather 101

5. Topic 5 –Geology
- Lesson A – Notable Landscapes in Nebraska
- Lesson B – Nebraska' Historical Geology
- Lesson C – Make Your Own Fossils

In the footer of each lesson, you will find a reference to National, State, and Local Standards addressed by each lesson.

Overview: Environmental Scavenger Hunt

8 Topics, 24 Lessons

6. **Topic 7 –Nebraska Flora**
   - Lesson A – Plant My Socks!
   - Lesson B – Nebraska Pollinators
   - Lesson C – Planting a seedling tree
7. **Topic 8 –Sustainability**
   - Lesson A – Carbon Footprints
   - Lesson B – Reduce and Reuse
   - Lesson C – Recycle
8. **Local, Community and State Partners:**
   - For Topic 1 – Game and Parks, - http://outdoornebraska.gov/ NRD - https://www.nrdnet.org/, Nebraska Trails - http://outdoornebraska.gov/trails/
   - For Topic 2 – Nebraska Rivers, Streams, and Lakes - https://outdoornebraska.gov/nebraskarivers/,
   - Topic 3 – Nebraska Natural Springs - https://www.anyplaceamerica.com/directory/springs/ne/, Nebraska Recycling Council, https://nrcne.org/resources/organics/, Nebraska Access - http://nebraskaccess.nebraska.gov/gardening.asp
   - For Topic 4 – Star Date - https://stardate.org/nightsky/constellations, Center for Science Education - https://scied.ucar.edu/learning-zone/clouds/cloud-types, National Weather Service - https://www.weather.gov/oax/oax-staff
   - For Topic 5 – American Anthropology Association - https://www.americananthro.org/, Nebraska Board of Geologists - https://nebog.nebraska.gov/
   - For Topic 6 – Nebraska Wildlife Biologists - http://nebraskapf.com/wp-content/uploads/2018/05/Wildlife-Biologist-Contact-Map-5-7-18.pdf
   - For Topic 7 – Nebraska State Arboretum - https://plantnebraska.org/plants/greatplants.html
   - For Topic 8 – Nebraska Recycling Council - https://nrcne.org/
9. **State, local, and national standards are listed for each lesson:**

In the footer of each lesson, you will find the standards that each lesson addresses at these levels.

- Nebraska Academic Standards
- College and Career Ready Standards
- National Standards Benchmarks for Science Literacy
- Next Generation Science Standards Grade Level Disciplinary Core Ideas

Topic 1 LA – Nature Clean-up Walk

Big Question:

Can we collect leaves from different plants AND trash to recycle or throw away?

Set the Stage:

As we take a nature walk, collect leaves in the paper bag and trash in the trash bag.

Resources:

Possible partners – Game and Parks, NRDs, and Biologists

Community Connection – seek out and walk a Nebraska Nature Trail.

Activity:

Procedure:

- Have children take a 20-30 minute nature walk, collecting different leaves from trees.
- Simultaneously, have them also collect trash and recycles in the trash bag.
- Upon returning home, have children use this website to determine what tree their leaves cam from https://www.arborday.org/trees/whatTree/whatTree.cfm?ItemID=E6A
- Have children use the paper and markers to make a poster drawing the tree the leaves came from. Glue the leaf on its tree!
- Have children use this site to verify what is recycled and what is waste - https://www.wm.com/us/en/recycle-right/recycling-101
- Have children add an image (draw or magazine) of each type of trash or recycled item they collected.

Note to Parent: Recycling and trash can be dealt with first, given its condition.

Reflection – Ask – what might have happened to the trash had we not picked it up.

Enrichment – Share ONE (or more) thing you learned about pests with a family member, neighbor, or friend outside of this club. Take a Nature walk and clean-up as a family!

Materials:

- Paper bag to collect leaves
- Trash bag for trash
- Gloves if you want
- Computer
- Internet
- Poster board
- Markers
- Glue

Standards:

BSB: The Do Place: NE – SC2.3.1.a, SC2.3.1.d, National – 5D/P2, 5F/P1
NGSS – 2-LS4.D.1, 2-LS4.D.2

Topic 1 – LB - Mimicry

Big Question:

What is mimicry and can we practice it?

Set the Stage:

Let's see what mimicry is! - https://www.youtube.com/watch?v=cV0kkFMK2CI

Discuss the clip above:

Note to parents/facilitators - Mimicry occurs when a plant or animal looks like another species to help it survive. One of the best examples of this is the Monarch and Viceroy butterflies, which have similar colors despite one tasting bitter to predators (Monarchs) and the other not tasting bitter (Viceroys). Try this experiment to explore how Viceroy butterflies use mimicry to trick predators!

Activity:

Procedure: After the intro video:

When your child is not around to see, label the cups A and B. Fill cup A halfway with Sprite. Fill cup B halfway with plain, uncolored Seltzer water.

- Now it is time to bring in your kid(s) to try the experiment! Hand your child only cups A and B to start. Tell them to make observations about what they notice in the cups. There are no wrong answers, and they may notice things such as:
    - Cup A has a liquid, gas/bubbles, and is clear. Cup B has a liquid, gas/bubbles, and is clear.
    - The liquid in both cups looks the same!
- Tell your child the cups represent two different butterflies, and they are going to pretend to be a predator that eats butterflies. Let them decide which predator they want to be. Lots of things eat butterflies, including birds, lizards, wasps, and more!
- Tell your child to taste Cup A, which is Butterfly A. Ask them how it tasted.
- Have your child predict what Butterfly B will taste like, then have them taste Butter y B. It should taste bitter compared to Butterfly A!

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Check out some Nebraska Watchable Wildlife with this tool! - https://outdoornebraska.gov/wildlifeviewing/

Materials:

- Internet access
- Computer
- URL - https://www.youtube.com/watch?v=cV0kkFMK2CI
- 4 cups that look the same
- Sharpie
- Sprite or 7 -Up
- Uncolored carbonated water

Standards:

BSB: The Do Place: Nebraska – SC12.3.4.d, National – 5F/H1, 5F/H7

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Topic 1 LC – Invasive Species

Big Question:

What is an invasive species? Can we study one>

Set the Stage:

Provide this 3 minute 41 second video on one invasive species, the Emerald Ash Borer - https://net.pbslearningmedia.org/resource/26a6e472-4338-4963-92d5-5f44e3282f21/indiana-expeditions-invasive-insects/

Resources:

Possible partners – Game and Parks, NRDs, and Biologists

Community Connection – seek out and walk a Nebraska Nature Trail.

Activity:

Procedure: After the intro video: Let's Play EAB Tag!

- Have all the students line up on one side of the "environment" (field, room, etc)
    - Everyone is a tree the first time
- Have the students get to the other side of the room (running if outside, walking if inside, etc.)
    - Everyone will make it to the other side
- Now assign a handful of students to be EAB infected trees
    - These students come to the middle of the "environment" – EAB has now been introduced to the environment!!
    - Their goal is to tag as many trees as they can while the trees try to get to the other side
- Now the trees try to get to the other side again without getting tagged by the EAB
- All trees tagged now join the EAB trees in the middle
- Repeat until all "trees" (students) have been tagged/infected
    - This can demonstrate how a pest spreads through a population
    - Why did less of the trees get across/"survive" after the EAB was introduced to the "environment"?

Note to Parent: This can also be simulated with fewer children and checkers.

Reflection - Wrap up: How do you think these pests and other diseases spread to trees? How can you help prevent this? Answer: Do not transport firewood or other elements found in nature across state or country lines

Enrichment – Share ONE (or more) thing you learned about pests with a family member, neighbor, or friend outside of this club.

Materials:

- Computer
- Internet
- URL - https://net.pbslearningmedia.org/resource/26a6e472-4338-4963-92d5-5f44e3282f21/indiana-expeditions-invasive-insects/
- Item 4
- Item 5
- Item 6
- Item 7
- Item 8

Standards:

BSB: The Do Place: NE – SC2.3.1.a, SC2.3.1.d, National – 5D/P2, 5F/P1
NGSS – 2-LS4.D.1, 2-LS4.D.2

Topic 2 – LA Nature Journaling

Big Question:

How can I observe and learn from the natural world?

Set the Stage:

Many notable scientists, naturalists, and even explorers kept journals of their observations. In this activity students will create a journal they can use to document the different fish, wildlife, and plants they see as they participate in the BSB environmental education (EE) program.

Resources:

Printable prompts -

Activity:

Show students the image of a page from Meriwether Lewis's journal (below). Before watching the intro video, ask questions to prompt exploration of the book page:

What sort of book is this?

What sort of person wrote in this book?

Who would find these records useful?

Intro video: https://net.pbslearningmedia.org/resource/journals-of-the-expedition-video/ken-burns-lewis-and-clark/

Procedure: After the intro video:

- Have students decorate a three-ring binder that they will use as their nature journal. Students can also create their own out of a paper bag if they don't have a three-ring binder.
    - See instructions for paper bag nature journal below.
- While students are decorating/creating their journal talk about how it could be used. For example, a nature journal is used to observe, experience, and record the world around us. It can be used to record questions, thoughts, and collect data while out in the field. Make sure students know anything from poems to sketches can be included in their nature journal. Other examples include leaf rubbings and pressed flowers.
- Once students have completed their nature journal send students on their first expedition to go observe nature and journal about it. If students are stuck, you can provide prompts (see resources above) like write a story about an animal you see or draw a picture of the flowers in the backyard. Encourage them to use descriptive writing about not only what they see, but how they feel about it.

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

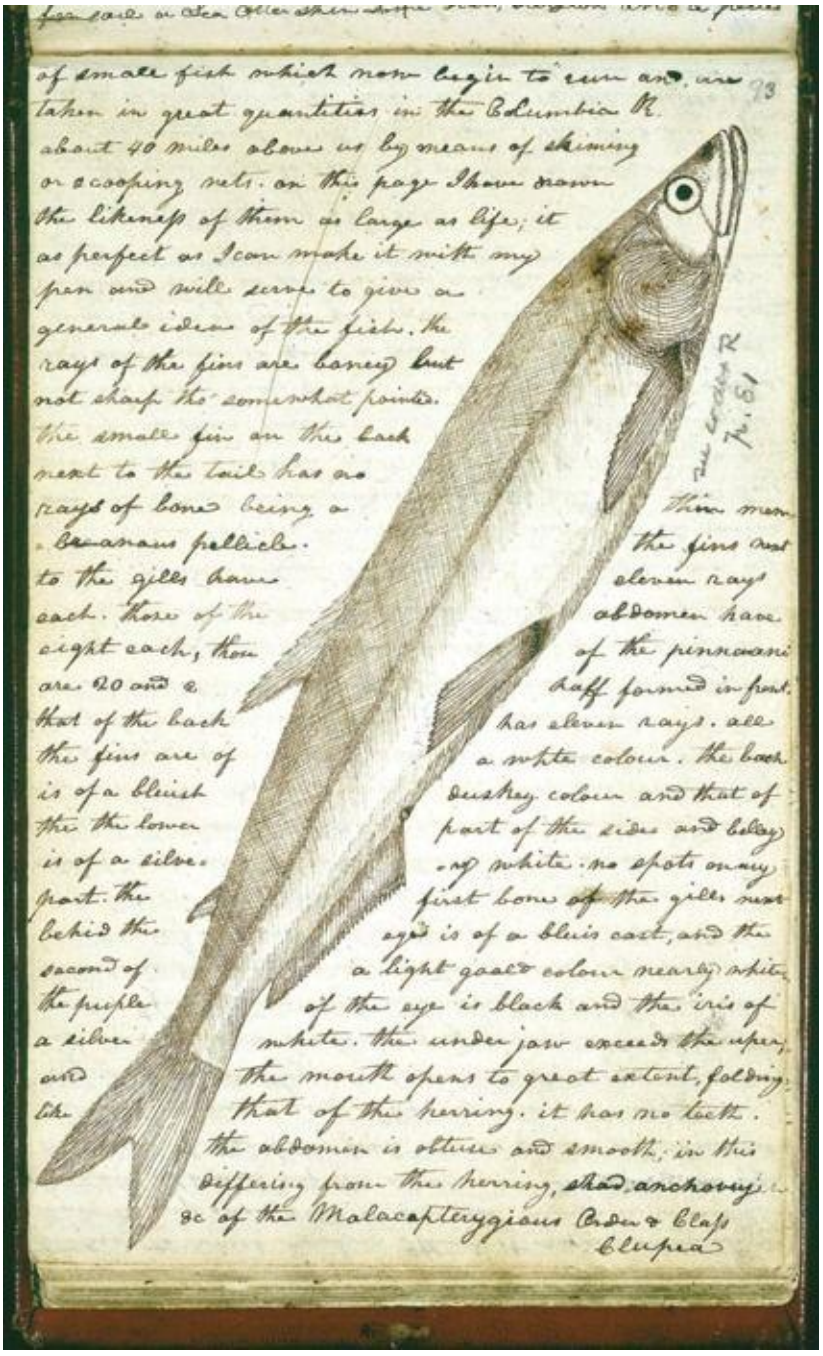
Materials:

- Three ring-binder
- Hole punched blank or lined paper
- Decorating supplies
    - Markers
    - Colored pencils
    - Stamps/stickers
- If creating paper bag journal
    - large paper grocery bag with handles
    - Ribbon or twine
    - Blank paper
    - Scissors
    - Tape
    - Hole Punch

BSB: The Do Place: NE -SS H5.4.1.C, SS 12.3.4.a, CCR – SC.HS.15.5.B,
BSB: The Do Place: Science – 5D/H1, 5D/H3, NGGSS – H5LS2.C.2, H5ESS3.C.1

Topic 2 – LA Nature Journaling

Meriwether Lewis journal entries



Enrichment – Plan to use this journal throughout the BSB EE program, or as inspiration strikes.

Note to Parents: Try journaling with the students and comparing observations and notes.

Standards:

BSB: The Do Place: NE -SS H5.4.1.C, SS 12.3.4.a, CCR – SC.HS.15.5.B,
BSB: The Do Place: Science – 5D/H1, 5D/H3, NGGSS – H5LS2.C.2, H5ESS3.C.1

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Topic 2 – LA Nature Journaling

Standards:

BSB: The Do Place: NE -SS H5.4.1.C, SS 12.3.4.a, CCR – SC.HS.15.5.B,
BSB: The Do Place: Science – 5D/H1, 5D/H3, NGGSS – H5LS2.C.2, H5ESS3.C.1

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Topic 2 – LA Nature Journaling

Paper Bag Journal Instructions:

1. Cut the bag down one side, across the bottom, and back up the other side. Do the same on the other side of the bag. You will end up with two flat pieces, each with a handle. These pieces will form the front and back cover of the journal.

2. Fold up each piece from the bottom toward the top. You want the front and back covers to completely cover the interior pages of your journal.

3. Tape (or staple) the edges forming a pocket on the inside of the front and back covers

4. To assemble your journal, stack the back cover, blank paper, and front cover.

5. Make sure all of the edges are lined up and then punch 3 holes along the edge

Standards:

BSB: The Do Place: NE -SS H5.4.1.C, SS 12.3.4.a, CCR – SC.HS.15.5.B,
BSB: The Do Place: Science – 5D/H1, 5D/H3, NGGSS – H5LS2.C.2, H5ESS3.C.1

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Topic 2 – LA Nature Journaling

6. Using twine, yarn, or ribbon to tie the booklet together.

7. Decorate the outside of the covers

Standards:

BSB: The Do Place: NE -SS H5.4.1.C, SS 12.3.4.a, CCR – SC.HS.15.5.B,
BSB: The Do Place: Science – 5D/H1, 5D/H3, NGGSS – H5LS2.C.2, H5ESS3.C.1

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Topic 2 – LA Nature Journaling

Journal Alternatives:

Students can use notebooks, or even pages of blank paper stapled together.

Standards:

BSB: The Do Place: NE -SS H5.4.1.C, SS 12.3.4.a, CCR – SC.HS.15.5.B,
BSB: The Do Place: Science – 5D/H1, 5D/H3, NGGSS – H5LS2.C.2, H5ESS3.C.1

Topic 2 LB Where Do Rivers Start?

Big Question:

Where does water come from and where does it go?

Set the Stage:

Do you know where your water comes from (before it comes out of the faucet)? By looking at the water cycle, we can see where rivers and streams start and how they are formed.

Resources:

Water cycle video: https://net.pbslearningmedia.org/resource/1f5bcb43-8163-46c7-bc6f-0c1156204c62/what-is-water-young-explorers/

Nebraska Magazine

Activity:

Talk with students about where their water comes from. Is it a river, stream, or groundwater? How did it get there? Let's create a river to show how water moves.

Procedure: After the intro video:

- Gather materials and let students create their watersheds in groups of 2-3. Be creative! Include things like rocks, sticks, and leaves if possible (build on a slope if possible).
- When students are done building, make predictions about where the water will go and why they think that.
- Simulate rain by pouring water at the top of the watershed with a watering can, hose, or cups of water.
- Use different watering frequencies to show storms, rainy days, or drizzles.
- For an extra step, have students build dams to divert rivers (add to prediction chart).

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Talk about local rivers and streams. Where does the water start and where does it go? Visit a local stream and look at things that might make it bend and curve – are they natural or did humans put them there?

Materials:

- Optional: Computer to watch intro water cycle video
- Outdoors:
  - Hand shovels
  - Sticks, Rocks, Leaves
  - Watering Can
- Indoors:
  - Paint trays / Plastic bins
  - Dirt, Sand, Gravel
  - Sticks, Rocks, Leaves
  - Watering Can
- Pencil and Paper

Standards:

BSB: The Do Place: NE – SC2.3.1b, SC2.4.2.a, National – 4B/P3

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Topic 2 LC - Kitchen Wetlands

Big Question:

What are wetlands and why are they good for the environment and people?

Set the Stage:

Wetlands provide essential plant and wildlife habitat, natural water filtration, and provide clean water year-round. Watch "The Value of Wetlands" on pbs Learning media to see what a wetland looks like and why it is important.

Resources:

https://net.pbslearningmedia.org/resource/lsps07.sci.life.eco.wetlands/the-value-of-wetlands/

Activity:

Let's try to make a wetland using kitchen supplies, a little dirt, and some decorative plants if you're feeling green.

Procedure: After the intro video:

- Students can draw pictures of wetlands they have seen before – older students can label unique wetland characteristics shown in the video
- Students can draw and cut out or fold paper animals, plants for "wetland" and buildings and roads for a nearby town
- Fill 2-3 coffee filters (paper towel substitute is okay) with dry beans (any filler you don't mind getting wet can substitute. Dirt okay but will get muddy) and add the plants and animals students created on top
- Place sponges on inside of a reusable container, then the coffee filter "planters" on one side and paper houses and streets on the other (see diagram)
- Sprinkle some water on the wetland side of the container to show water absorption and flood protection
- Remove paper houses and streets and add food coloring to water and sprinkle until it seeps out of "wetland"

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Visit a pond, stream, or wetland close to your home and see all the plants and animals! Record what you find in your Nature Journal

Materials:

- Computer to watch introduction to wetlands
- Paper and colored pencils
- Clear reusable container
- Coffee filters or paper towels
- Dry beans, marbles, or dirt
- Sponges
- Cup of water
- Food coloring

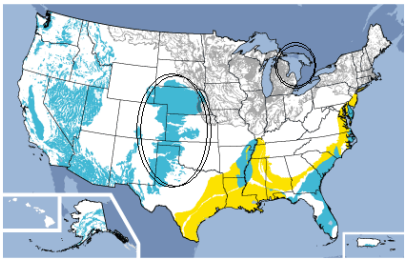
Standards:

BSB: The Do Place: CCR – SC.5.13.4.B, Academic – SC5.3.3.c, SC8.3.3.e
BSB: The Do Place: National – 5D/E1, 4B/M8, NGSS – 5-ESS2.A.1, 5–ESS2.C.3

Topic 3 LA – Aquifers?

Big Questions:

What are aquifers? Can we make one? How do we protect it?



Set the Stage:

Ask your child where they think our drinking water comes from.

Resources:

Three one-minute videos are our main online resources for this lesson. They are found here - https://net.pbslearningmedia.org/resource/build-aquifer/aquifer-in-a-cup/

Activity:

Procedure: After the first video:

- Ask your child to tell you what they saw happened in the video.
- Can we make an aquifer in a cup? Place sand in the bottom of the empty cup. Place water to cover. Place gravel on top to represent land. Use the pup to bring the water up from the bottom of the cup. https://net.pbslearningmedia.org/resource/build-aquifer/aquifer-in-a-cup/
- Watch part 3, How to protect our Aquifer. https://net.pbslearningmedia.org/resource/build-aquifer/aquifer-in-a-cup/
- Discuss ways that you and your family can protect the aquifer.
- Make a poster to reflect those ways,

Note to Parent: This may take more than one session, depending on how involved the structures become!

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Play the 1 minute 50 second movie on the Ogallala Aquifer - https://www.youtube.com/watch?time_continue=2&v=dkjaLRfdRA0&feature=emb_logo

Materials:

- Computer
- Internet
- URL -
- 4 plastic cups, one empty
- gravel
- sand
- water
- pump from your hand soap pump
- Poster paper
- Markers, crayons, etc

Standards:

BSB: The Do Place: National – 4B/M8, 4B/M11bc, NGSS 5-ESS2.A.1, 5-ESS2.C.3

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At Home Compost

Big Question:

What is compost, and how can it be used to benefit the environment?

Set the Stage:

Have you ever wondered, How do plants disappear seem to disappear when left on the ground? What exactly happens to the soil?

Resources:
https://youtu.be/kA3q07paNbE

Activity:

Procedure:

Have students think about what happens to their leftover food scraps, (use examples), write them out in their journal.

Show students the PowerPoint explaining what compost is, and how it can benefit the soil.

Craft Process:

!) take the gallon freezer bag, using a marker, write your name and today's date on the front of it

2) gather your food scraps, these can include (corn husks, potato peels, eggshells, coffee grounds, banana peels, apple cores) Ensure that all pieces are relatively small, (about an inch in size or smaller) If they are large, have a parent cut them into smaller pieces, and place inside the bag

3) use paper by-products such as (old newspapers, used paper towels, teabags) tear them into smaller pieces and add them inside the bag too

4) The last thing to be added can be plant materials (cut grass, lawn

Materials:

-Vegetable scraps

-Paper by-products

-Plastic gallon freezer bag

-Marker

Standards:
BSB: The Do Place: NE – SC2.1.b, SC2.1.g, National – 101/M6, 101/M8,
NGSS – SEP.3.d, SEP.3.c

At Home Compost

trimmings, dead plants) note: make sure to avoid using meat, cheeses, and fat)

5) Once your bag is a little over half full, seal it up, then students can shake up the bag to mix the components together

6) Your compost is now complete, your bag can stay in a sunny area, preferably outside until ready to use. It will break down fully in 1-2 weeks. It can be used anytime during this

7) when ready to use your compost, find where you would like to use it, (house plant, family garden, lawn) dump the contents of your bag around the topsoil of your location and ensure to spread it around

Reflection:

Where would the materials I used have gone if I didn't make my own compost?

Observe how the compost breaks down

use journal to describe how the plant grows before and after your compost is used

Standards:

BSB: The Do Place: NE – SC2.1.b, SC2.1.g, National – 101/M6, 101/M8,
NGSS – SEP.3.d, SEP.3.c

Topic 3 – LC Leave Some for the Fish

Big Question:

How can humans balance community needs with environmental protection?

Set the Stage:

Nebraska has more miles of Rivers and Streams than any other U.S. state. What do all of those rivers and streams do for animals and humans? We are going to visit a river to see the biodiversity and the importance of all of that water.

Resources:

Here is another resource video: https://net.pbslearningmedia.org/resource/255ea21c-2339-4907-8c4a-791c1dab01aa/working-landscapes-basics/

Visit a local stream or river if you can, here is a link to the live stream of the Platte River at Rowe Sanctuary if you cannot: https://rowe.audubon.org/birds/crane-cam

Activity:

Procedure: After the intro video:

- Talk about what students saw in the video and why those things are important.
- In groups of 3-4, ask students to think about different parts of a community and draw them onto the blank poster so that they can be cut out in squares (houses, farms, ranches, school, etc.).
- Provide student groups with a poster with a pre-drawn pond with some plants symbolizing wetlands around it and roads on the borders of the poster. Draw water and plant icons to show eco-services and resources.
- Allow student groups to build their communities (use tape loops to keep pieces in place but move later).
- Allow each group to explain how they built their communities and why.
- Talk about how their communities balance meeting community needs and protecting the environment.

Reflection

To communicate their observations: "I saw…"
To reflect on their choices: "I thought…but then…"
Talk about what communities can do to meet their needs and protect the environment (water treatment, protecting wetlands, sustainable farming.

Enrichment – Ask for community members to participate and explain what their organizations do to protect the environment and how student actions and choices can help.

Materials:

- 2 poster boards
- Tape
- Markers or Pencils
- Scissors
- Optional – computer to watch live stream of Rowe Sanctuary
- Optional – community member presentation

Standards:

BSB: The Do Place: National – SC5.3.3.c, SC8.3.3.e, NGSS -5D/E1, 5D/M1b

Topic 4 – LA – What are Stars and Constellations?

Big Question:

How much do you know about stars?

Set the Stage:

We all look up at the stars at night and see them there. But, how much do we really know about them? Let's get the basics! What are Stars? 3 minutes, 38 seconds.
https://www.youtube.com/watch?v=ZrS3Ye8p61Y

Resources:

Now that we know a little more about stars, let's see how they relate to constellations. Constellations are simply groups of stars that make up a shape. Today, there are 88 named constellations! Let's make one!
https://net.pbslearningmedia.org/resource/ready-jet-go-what-is-constellation/what-is-a-constellation-ready-jet-go/

Procedure: After the intro video:

- Ask your child to tell you what they saw happen throughout the videos.
- Handout the Constellation guide, have your child select one to make
- Have them select one constellation
- Fold and mold tin foil over one end of the paper towel roll, tape it down
- Then, using the push pin, poke holes in the tin foil that resembles the constellation chosen
- Place the flashlight at the other end of the roll. Turn it on and turn out lights as much as possible.

Note to Parent: If you would like a short video on these steps, review this - https://www.youtube.com/watch?time_continue=28&v=R5NzSp88suQ&feature=emb_logo

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Here are 15 cool ideas for more constellation creations - https://kidscreations.com/blog/15-cool-stargazing-activities-kids/

Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

Materials:

- Internet
- Computer
- URL - https://www.youtube.com/watch?v=ZrS3Ye8p61Y
- URL – Constellations https://net.pbslearningmedia.org/resource/ready-jet-go-what-is-constellation/what-is-a-constellation-ready-jet-go/
- Constellation Handouts
- Empty paper towel roll
- Tin foil – 3 inch square
- Tape
- Push pin
- Flash light

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Astronomical Navigation

Big Question:

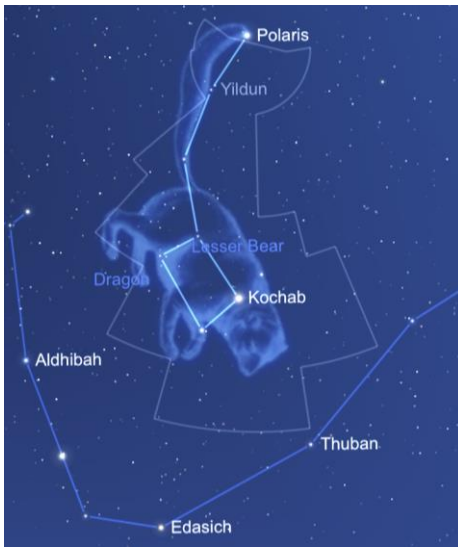
How do we experience the world around us? How is that different from people who didn't have the technology we do?

Set the Stage: Icebreaker Activity

Take students outside to an open space. Could be the playground, football field, or a local park/their own backyard. Ask students to run to the north side of the space. Repeat with each of the cardinal directions (north, south, east, west).

Activity:

- Ask students to share how they knew which direction to go/how to tell what direction you're moving in
    - Possible answers include where the sun is located, what directions shadows are falling in, or having a compass to tell you what direction you're facing.
- Lead a short discussion on how people navigate now, and how they used to navigate.
    - Now we use GPS systems and view directions from maps on our phones, computers, and in our cars.
    - People used to use a compass to tell what direction they were going.
    - Before compasses, people would navigate by observing the sky
        - Ask students what direction the sun rises and sets in?
            - Emphasize that those directions don't change, and using the sky to navigate has been done since before we had the technology we do today.
- Introduce the activity:
    - Create partners or small groups consisting of an older student/adult/parent with a smartphone and the StarChart app paired with younger students who don't have phones/won't be using them.
    - Students will spend some time in the StarChart app exploring the sky above them
    - Give students 5-10 minutes to explore independently, then ask them to focus on stars and constellations found at each cardinal direction.
        - Polaris or the North Star is the specific focus of this lesson because it will be present no matter what time of year it is. Other stars and constellations at cardinal directions will change on the time of year, but students can identify one that is present at that time.
        - Ask students how they can use one star to navigate in any direction?



Materials:

Handout with basic compass (One per student)

StarChart app (One person with the app for each group)

Pens/pencils/markers

Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

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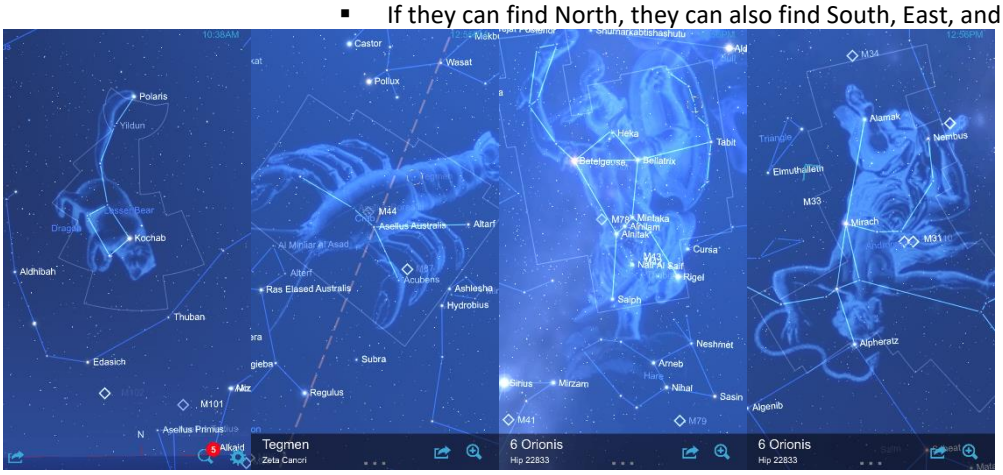
Astronomical Navigation

- If they can find North, they can also find South, East, and West.



Screenshot examples of StarChart, showing Polaris at North, the Crab at east, Orion at South, and Andromeda at West.

Closing Activity/Wrap-Up

- Return inside, or bring blank printed charts outside along with pencils, markers, etc.
- Students will create their own map of the stars by drawing one constellation at each cardinal direction. Start with the North Star and it's constellation (Ursa Minor or the Small Bear) on the North side of the chart. Students can choose the other three constellations depending on the time of year, with the assistance of an older student or an adult to make sure their choices reflect North, South, East, and West. This completed map will be their Scavenger Hunt find.

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

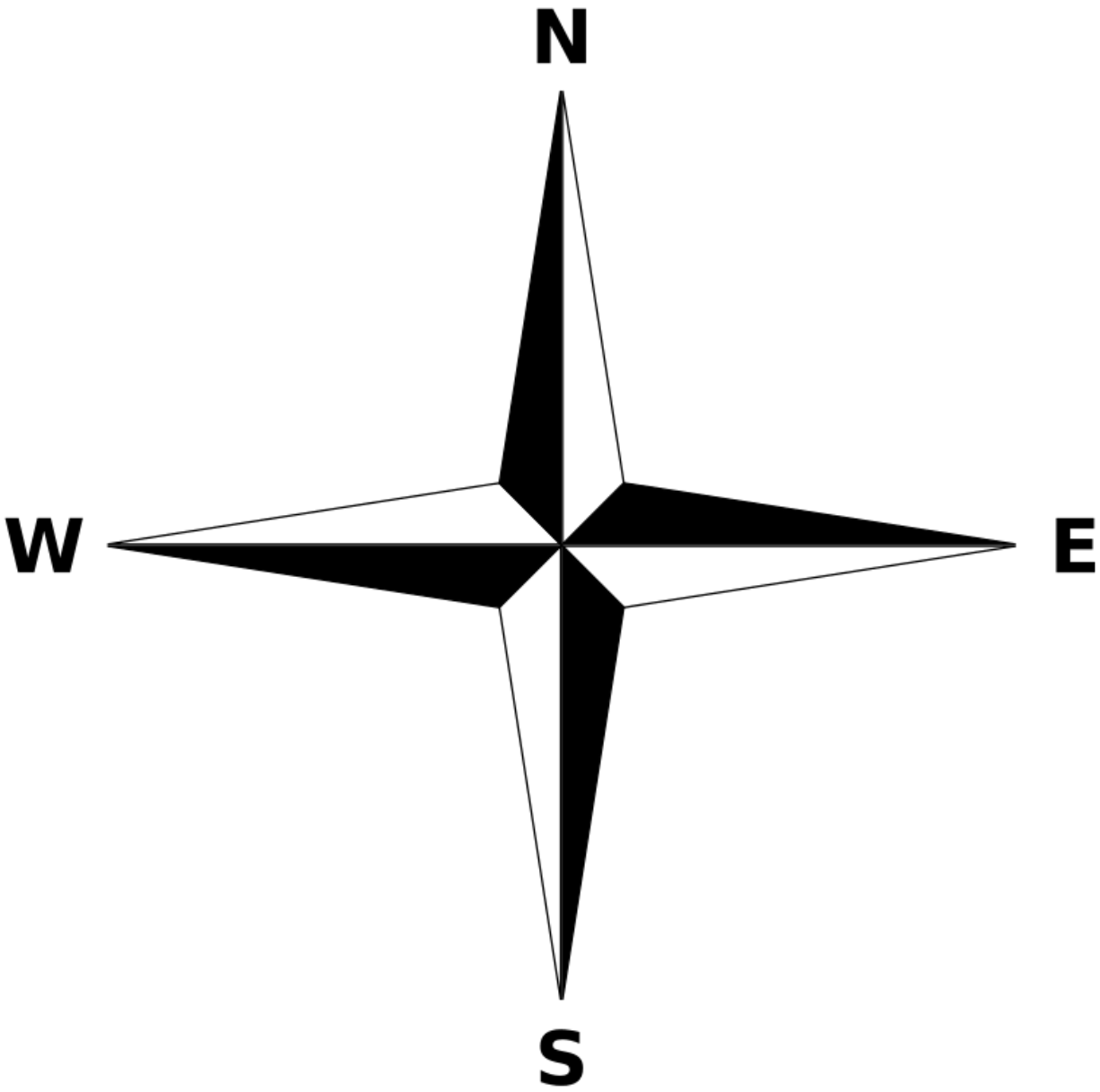
Enrichment:

Place completed star charts in Nature Journal as Scavenger Hunt find.
Encourage students to return to this project in a few months and observe how the constellations at South, East, and West have changed, but the North Star or Polaris is still facing North.
Students could research why constellations are named what they are, looking into the mythology and Native American stories surrounding stars and constellations.

Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

Astronomical Navigation



Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

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Topic 4 LC - Weather 101

Big Question:

How do we predict the weather?

Resources:

https://net.pbslearningmedia.org/resource/nvcl.sci.earth.making/the-making-of-a-cloud/ - 3 minutes 10 seconds

https://net.pbslearningmedia.org/resource/nvcl.sci.earth.types/why-so-many-cloud-types/ - 3 minutes 34 seconds

Set the Stage: Icebreaker Activity

- Human Chain Tag: Cloud Edition
    - Take students outside and assign two people to be It. The students who are It are clouds and the students who haven't been tagged yet are water in the air. When a student gets tagged, they join hands with their tagger to create human chains that form imaginary clouds. Chains can tag other chains, making clouds grow and grow until all of the water droplets have condensed into clouds. Keep playing until all students have formed into one chain.
    - If time allows, play through a few times with different students being It.

Activity:

- Take the students outside (if you're not already outside) and ask them to describe today's weather.
    - If they don't specifically state it, ask them to discuss the clouds (or lack of clouds).
- Ask a student or students to share how clouds form
    - Clouds form when water droplets in the air condense and solidify. Larger, fluffier clouds are holding more water in them. When a cloud gets full of water, it becomes too heavy and results in precipitation depending on the temperature of the air.
- Using these videos (making of a cloud and cloud types), discuss how the clouds in the sky can be used to predict the weather (specifically precipitation, but also humidity and sometimes temperature).

Closing Activity/Wrap-Up

- Using the appropriate Bingo sheet for that grade level, have students play Cloud Bingo with what they can see in the sky right now.
    - If it is cloudy or there is only one type of cloud to be found, an alternative option is to show pictures of the different kinds of clouds and ask students to identify them on their bingo sheet.

Materials:

Print off of Cloud Identification (one per student)

Print off of Cloud Bingo for appropriate grade levels (One per student)

Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

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Topic 4 LC - Weather 101

- Their scavenger hunt deliverable will be a picture to match one (or more) of the squares on the Bingo card

Reflection

To communicate their observations: “I saw…”
To reflect on their predictions: “I thought…but then…”
To demonstrate science community skills: “I liked…” or “loved…”

Enrichment:

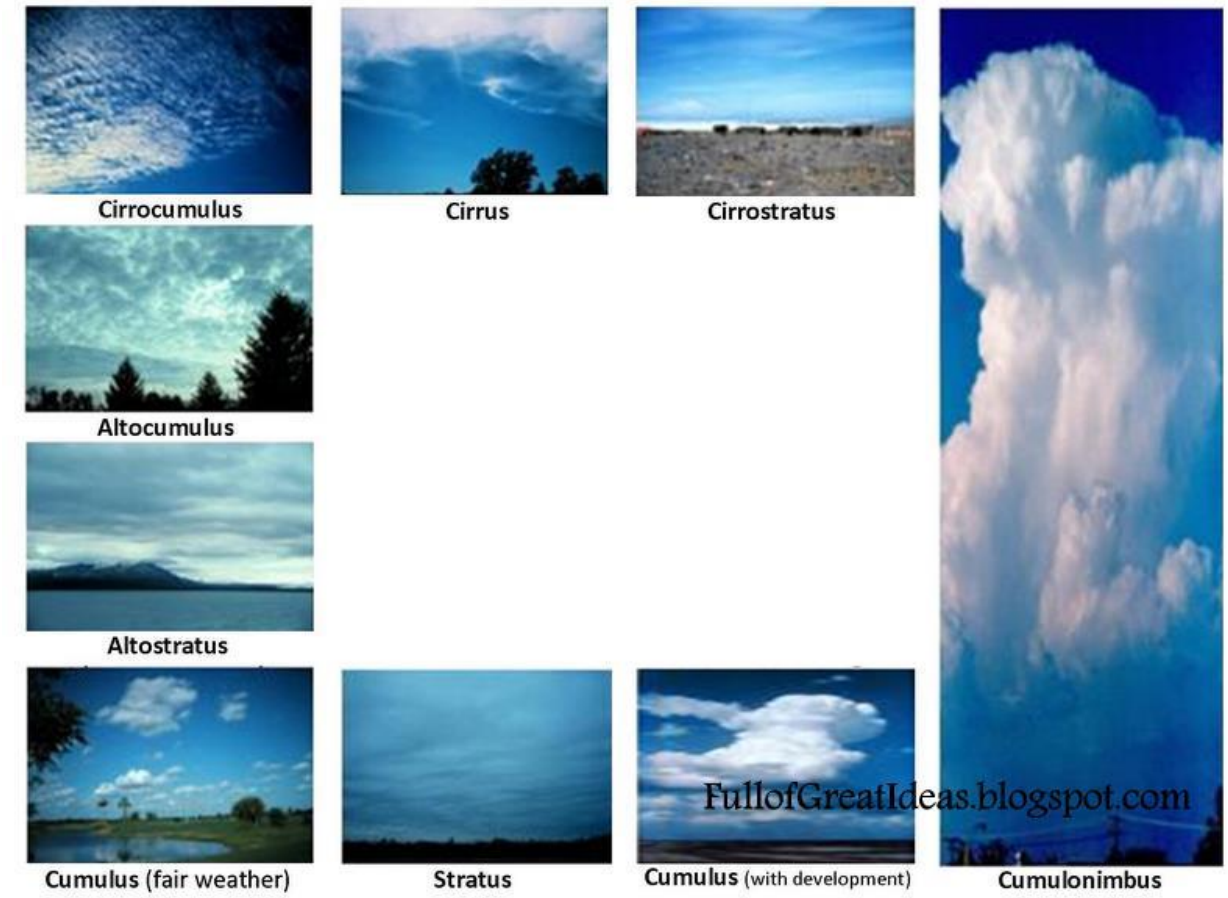
The students can add their Cloud Bingo card to their Nature Journal
Invite a local weatherman or meteorologist to visit your class and talk about predicting the weather.
Encourage students to keep a weather journal in their Nature Journal and record what the weather is like when they see a specific type of cloud.

Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

Topic 4 LC - Weather 101

Cloud Identification Handout



Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

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Topic 4 LC - Weather 101

	Cloud Bingo (5th-8th grade)	
Cirrocumulus	Stratus	Cumulonimbus
Cumulus	Fair Weather Cumulus	Altostratus
Cirrus	Altocumulus	Cirrostratus

Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

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Topic 4 LC - Weather 101

	Cloud Bingo (3rd-4th grade)	
Rabbit	Dragon	Elephant
Dog	Flower	Cat
House	Snake	Car

Standards:

BSB: The Do Place - NE SC2.4.1.a, SC2.4.b, National 4A/PI, 4A/E1, NGSS 1-ESS1.A.1

T6-LA Wildlife Bingo

Big Question:

What is biodiversity? Why is biodiversity important?

Set the Stage:

Biodiversity is the number of species in a particular habitat or ecosystem. It is important for many animals and plants to exist in an environment to keep the environment running smoothly. Many times when humans remove one animal from an environment and accidentally hurt many other organisms. All creatures are important members of their ecosystem.

Activity:

Make your own Binoculars:

1. Gather Materials:
    - Necessary materials: toilet paper tubes(paper towel or wrapping paper tubes work too), string or ribbon, hole punch, glue
    - Optional materials: markers, glitter glue, stickers, craft foam, felt, crayons, colored craft paper, paint, extra cardboard, craft scissors, pipe cleaners, anything else your kids may want to decorate their binoculars
2. Instructions: https://www.audubon.org/news/diy-craft-how-make-cardboard-binoculars-kids
3. Go outside and use your binoculars to watch for wildlife

Wildlife Bingo

4. Distribute seasonally appropriate wildlife bingo cards.
5. Take kids outside to an open area where they are likely to see wildlife. A local park or nature area or even your own yard would work.
6. Allow kids to explore and look for wildlife, when they see something they can check it off on their bingo card.
7. Kids can take their bingo cards with them to continue their game in the car or at home

Reflection

How important is each species in an ecosystem?
Reflect on what happened in the game with each interruption.
How do you think we can protect Nebraska's ecosystems and biodiversity?

Materials

- Nature journal or notebook to record observations
- Wildlife Bingo Cards
- Cardboard rolls leftover from paper towels or toilet paper
- Tape or glue
- Hole punch
- String (yard, ribbon, twine, whatever you have around!)
- Markers, colored paper and any other craft materials

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

T6-LB Backyard Birder

Big Question:

What types of birds live in my area and what do they eat?

Set the Stage:

Did you know there are about 10,000 different types of birds in the world? In this lesson students will use DIY bird feeders to find out what birds live in their neighborhood, and what kind of food these birds like best.

Resources:

The Common Feeder Birds Poster: https://feederwatch.org/learn/identifying-birds/#download-feederwatch-posters

Activity:

Procedure:

- Have students create a DIY bird using the instructions in this video (to.pbs.org/DIYbirdfeeders). Older students can look for materials and build their birdfeeders with anything they think would work for added challenge (make sure materials are safe for birds; see examples below).
    - While students are building their bird feeders ask why they choose the materials they did, and what type of birds they think will visit their feeder.
- Once the students have completed their bird feeders hang them outside. Note: It may take a few days before birds start visiting feeders.
- Have students observe their feeder and write observations in their nature journals. If students aren't sure what to record provide prompts like what do the birds look like that visit your feeder? Which birds can you identify? (use a field guide to help with bird identification) How many birds visit the feeder in an hour, a day, or a week? Did you see any animals besides birds at your feeder? If so, why do you think they visited your feeder?

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Keep the feeders full or continue to make new ones. As the seasons change have students note in their nature journals how the birds that visit change. Have students write explanations for why this might be. Students can also see what kind of food birds like best by trying different bird seed in your feeder or creating multiple feeders with different seeds.

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

Materials:

- Pinecone or empty paper towel/toilet paper roll
- Peanut butter
- Hole puncher
- Butter knife or spoon
- Rope, cord, ribbon, or wire
- Bird seed
- Sticks (2 ft in length)
- Nature journal to record observations

T6-LB Backyard Birder

Other Bird feeder materials and instructions:

- Milk jugs or milk containers with cap (1 per child)
- Scissors
- Wooden dowels, twigs, or wooden coffee stirrers (2 per child)
- Bird seeds
- Mini cups (1 per child)
- Water
- Tape
- Paper plates
- Possible decorations: tree bark, shells, stones, stickers, etc.
  Note: Make sure that any materials you use to decorate the bird feeders are safe for the birds. If possible, stick to as many natural, recyclable materials as possible.
- Paintbrushes, when using paint
- Glue
- Twine, yarn, or thin rope

1. Cut a large hole in the center of one side of the carton, starting several inches from the bottom.

2. Beneath this large hole, cut a small hole to poke a stick through. This will provide a perch for dining birds.

3. Cut two small holes on either side of the top of the carton to thread the rope or wire through.

4. Paint and decorate your feeder. Want to make your backyard birds a cottage? An apartment building? Use your imagination!

5. Fill with birdseed. (Learn more about what types of seed attract different birds in the Audubon Guide to Birdseed.)

6. Hang your feeder in a spot about five feet from the ground, preferably with a good view from your window.

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

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T6-LC Food Chain Scavenger Hunt

Big Question:

What is a food chain and what happens if we remove one "link" in the chain?

Set the Stage:

Each ecosystem has its own food chain: sometimes worms and snails, small fish, bigger fish and turtles; sometimes seeds and mushrooms, squirrels and raccoons, and foxes and owls. What food chains are in Nebraska near you?

Resources:

Think about what animals you recognize in ecosystems near you. Here is a video of some of the biodiversity in Nebraska:
https://net.pbslearningmedia.org/resource/6e90dbd3-ad08-45fb-b3a1-fdfe080ffbbb/biological-diversity-on-the-prairie/

Activity:

Procedure: After the intro video:

- Have students brainstorm local food chains and draw diagrams labeling organisms and the food web relationships. Ask students what they think could interrupt that food chain (new predators, damaged environment, etc.).
- Make or gather 4 categories of organism cards with the ecosystem role of each: primary producer, primary consumer, secondary consumer, top predators. Designate an "ecosystem area" (playground, backyard, or gym).
- Hide cards in the "ecosystem area" where they might occur in nature. Hide all primary producers, most primary consumers, few secondary consumers and no predators - keep extra cards in hand for students to exchange.
- Students will "scavenge" for primary producers and consumers to trade in for higher level organisms (4 primary producers = 1 primary consumer, 3 primary consumers = 1 secondary consumer, 2 secondary consumers = 1 top predator). Goal is to get to the top of the food chain!
- Introduce brainstormed interruptions adding or removing cards accordingly
- Simulate game 2-3 times

Reflection

How important is each species in an ecosystem?
Reflect on what happened in the game with each interruption.
How do you think we can protect Nebraska's ecosystems and biodiversity?

Enrichment – Research endangered and threatened species in Nebraska. How might losing those species affect the food chain? What can we do to save them?

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

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Materials:

- Computer to watch video (not required)
- Colored Pencils and Paper
- Pictures of local animals to help students draw
- Card stock paper and markers to make animal cards.
- For 5 students to reach goal…
  - 45 primary producers
  - 15 primary consumers
  - 10 secondary consumers
  - 5 top predators
- Reduce cards to show competition for resources (or continue to hide resources as they are exchanged).

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T7 –LA Plant My Socks!

Big Question:

What will happen if I wear old socks outside in the grass and then plan and water them?

Resources:

https://net.pbslearningmedia.org/resource/plumrx-sci-missionseedspot/mission-seed-spot/ - minute, 37 second from Plumb Landing showing the plan

Activity:

Procedure: After the intro video:

- Start by having kids watch Plant Your Socks!, a short animated video about wearing fuzzy socks outdoors to collect seeds on the ground.
- Then, head outdoors for Seed Travels, a hands-on activity in which kids go on a scavenger hunt to find different kinds of plants and seeds in their socks.
- Students then come inside and place some dirt in the pot, their socks, and top with more dirt. Water planting and place near a window or sunny place.
- If time, student can play seed racer. Players explore the different ways that seeds are dispersed (as burrs in fur, consumed by birds or transported by mammals, floating on the wind or water, or spinning through the air), in this interactive game from PLUM LANDING. Along the way, players learn about the plants in a mountain ecosystem, how their seeds travel, and how animals rely on them. This activity can be saved for tomorrow if you run out of time.

Note to Parent: This may take more than one session, depending on how involved the structures become!

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Watch what happens at the 10, 20, 30, and 40-day mark. Keep dirt moist, but not too wet. Have students make short observations in the journals about the changes that they see. See at an upcoming family night!

- Computer
- Internet connection
- A pair of old socks for each student
- A pot to plant socks and dirt in
- Dirt
- Water

Standards:

Science: SC2.3.1A, SC2.3.1B, National: 5C/P2, 5D/P2, NGSS: 2-LS4.D.1., and 2-LS4.D.2.

T7 – LB All About Pollinators

Big Question:

What pollinators live in Nebraska and what is their natural habitat?

Set the Stage:

Almost 90% of the world's flowers plant species, and more than 1200 crops rely on animal pollinators. To become more familiar with pollinators student will observe them, then research one of their choice.

Resources:

R1) Pollinators, Meet Your Plants: http://outdoornebraska.gov/wp-content/uploads/2015/12/Pollinators-meet-your-Plants.pdf

Activity:

Intro Video: https://net.pbslearningmedia.org/resource/926ef5cb-5886-47c3-b82b-cdb8dc3d21e4/pollinators-putting-food-on-the-table-nature-works-everywhere/

Procedure: After the intro video:

- Show students the different flowers in the **Pollinators, Meet Your Plants PowerPoint** (R1). Ask them which is their favorite and why? Explain to students that just like they prefer some flowers over other, so do pollinators. For example, because a butterfly had a long slender mouth part, they prefer flowers that are long and tube-like.
- Brainstorm with students all the different pollinators we have in Nebraska – bees, butterflies, moths, beetles, ants, and birds. Can mention that although bats are not pollinators in Nebraska, they are in other parts of the world. Refer to Pollinators, Meet Your Plants (R1) for pictures of pollinators.
- Take students to a site with plenty of flowers on a pollinator expedition with their nature journals to observe pollinators at work. Students can watch flowers for visiting pollinators as long as their attention/time permits. 10 minutes is optimal. Make sure to remind students that they should not try to touch or disturb pollinators. Have students note what pollinators they see on different flowers, and how many pollinators they see. Encourage them to draw pictures of their observations. If student see no pollinators have them guess why that is.

Materials:

- Identify a site with many flowers
- Nature journal or notebook to record observations
- Computer for internet research
- Pollinators, Meet Your Plants Presentation (see resources)

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

T7 – LB All About Pollinators

- After observing pollinators have students pick their favorite pollinator – preferably one they observed locally. Allow students to continue to observe the pollinator they picked and record what they see. Students can also supplement their observations with internet research, but it is not necessary to do this. Have students research what their favorite pollinator looks like, how many they see, what flowers/plants they frequent, and their behavior.

- Once students have collected their information have them present what they learned to peers or family members. Students can present whatever they find most interesting, including facts, pictures they drew or took.

Reflection:

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Students can continue to observe pollinators and record their data on pollinator data sheets (see resources) to participate as citizen scientists in the Great Sunflower Project.

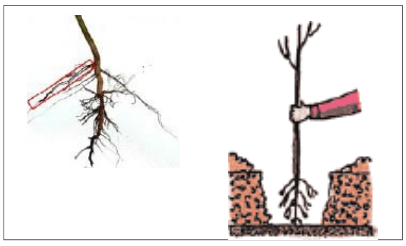
Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

Topic 7 LC – Planting a bare root tree

Big Question:

How do you plant a seedling tree?



Set the Stage:

How to Plant Bare Root Trees video: 1 minute, 13 seconds
https://www.youtube.com/watch?v=KILm-tZBvTo&feature=emb_logo

Note to facilitator: You can contact your local Nebraska's Natural Resource District location to order trees here - https://www.nrdnet.org/tree-program

Activity:

Pre-Activity

- Stake out planting locations
- Soak trees in water for 3 to 6 hours before planting

Main Activity

- Dig the hole
- Place the tree in the hole, first root at soil line
- Backfill the soil around the tree and lightly compress
- Mulch the area in the shape of a dog dish, keeping mulch away from the trunk
- Place a cage around the tree
- Water the tree
- Repeat for each bare root tree that you have

Reflection:

- To communicate their observation: "I saw..."
- To reflect on their predictions:"I thought...but then..."

Enrichment:

Take the Plum Tree Challenge, 2 minutes, 54 secs

Materials:

- Bare Root Tree(s)
- Shovel(s)
- Bucket(s) of water
- Mulch
- Optional tree cage

Standards:

BSB: The Do Place: Nebraska – SC2.3.1. b, SC2.3.2. b, CCR – SC.2.7.2. A
BSB: The Do Place: National – 5C/P2, 5E/P1, NGSS – 2-LS2.A.3

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T8-LA Carbon Footprint

Big Question:

How do YOU impact the environment? What would happen if everyone on earth lived the way that YOU do? What can YOU do to reduce your impact?

Set the Stage:

Environmental impact is how YOU change the environment around you. It includes how much energy you use, where the food you eat comes from, and the things that you buy. You can reduce your impact by using less energy, buying local foods, buying fewer things or things that are less harmful to the environment and in many other ways.

Activity:

- Introduce the idea of environmental impact through an environmental impact calculator or quiz (online and paper options available)
    - Online: https://www.footprintcalculator.org/
    - Printable: http://www.willisscience.com/yahoo_site_admin/assets/docs/Ecological_Footprint_Calculator.190105129.pdf
- Explain what the results represent
- Ask students how they feel about their results. Then allow students to write their thoughts and feelings about their environmental impact in their nature journal

Materials:

- Nature journal or notebook to record observations
- Environmental impact quiz (online or paper)

Reflection:

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Students can explore new ways to reduce their impact on the environment. They can take their ideas home and try them out with their families.

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

T8-LB Reduce, Reuse, and Recycle

Big Question:

Why is it important to reduce, resuse and recycle? What can YOU do to reduce waste?

Set the Stage:

About 100 billion plastic bags are used annually in the US alone and only about 2% of them are recycled! That's 2 out of every 100 bags! Plastic shopping bags take 10-20 years to decompose in landfills while plastic bottles take 450 years. Some plastic items can take up to 1000 years to decompose!

Activity:

Procedure:

- Ask students to take 5-10 minutes to locate or list as many single use products as they can find around the house or classroom.
    - Plastic bags, water bottles, spice jars, food packaging, paper plates, toy packaging, disposable cups, etc…
- Have them list these things in their journal or notebook. Brainstorm as a group to come up with ways to reduce, reuse or recycle these items.

Craft Procedure: Recycle a t-shirt into a reusable shopping bag

- Step 1: Cute sleeves off of a short: Lay your t-shirt out on a flat work surface. Using a sharp pair of scissors cut the sleeves off of your t-shirt.
- Step 2: Cut neck out of shirt: you can use a large bowl and draw around it on your fabric to get a nice rounded scoop shape or just eyeball it and cut the scoop.
- Step 3: Cut slits: At the bottom of the shirt cut slits about every inch through both layers (length will depend on the size of the shirt so you will have to make the call) long enough that you will be able to tie them twice.
- Step 4: Tie knots: get the slits lined up and starting with one end tie the aligning front and back pieces together in double knots until you have done the entire row.
- Step 5: decorate your bag any way you want
- If you don't want the knows to show you can tie them on the inside for a less fringed look.

Example pictures at : https://www.instructables.com/id/No-Sew-10-Minute-T-Shirt-Tote/

Materials:

- Nature journal/notebook to record observations
- One old t-shirt
- Scissors

Optional materials:

- Fabric paint
- Fabric markers
- Fabric dye
- Iron-on patches
    - Iron
- Buttons
- Fabric scraps
- Ribbons
- Hot glue gun or needle and thread

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

T8-LB Reduce, Reuse, and Recycle

Reflection

How important is each species in an ecosystem?
Reflect on what happened in the game with each interruption.
How do you think we can protect Nebraska's ecosystems and biodiversity?

Enrichment – Students can take their bag with them to the store.

Standards:

BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1
BSB: The Do Place: NGSS - 2-PS1.A.1; K-PS2.A.2; K-PS3.C.1; NS 4D/P1

Topic 8 LC Recycling

Big Question:

What can we do with plastic bottle recycling at home?

Set the Stage:

Note to Parents: You will want to watch this video first and decide which of the ten recycling projects you want to do. https://www.youtube.com/watch?v=edXimuzIVhk

Then, collect the supplies for that project. Play this video again, this time with your child.

Activity:

Procedure: After the intro video:

- Ask your child what they thought of each project.
- Describe which one you plan to do today.
- Begin with cutting the plastic bottle/s as shown.
- Follow project steps.
- Put your new creation to work!

Note to Parents: Assistance may be need in cutting the bottle and gluing with the gun.

Materials:

- Computer
- Internet
- URL - https://www.youtube.com/watch?v=edXimuzIVhk
- Plastic bottles
- Scissors
- Hot glue gun
- Other supplies as needed for each project

Reflection

To communicate their observations: "I saw…"
To reflect on their predictions: "I thought…but then…"
To demonstrate science community skills: "I liked…" or "loved…"

Enrichment – Here is an interesting and fun video about recycling cow manure (poop)? https://net.pbslearningmedia.org/resource/nvgs-sci-recyclingpoop/wgbh-nova-gross-science-recycling-poop/

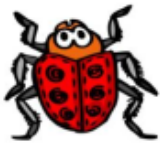
Standards:

BSB: The Do Place: NE – SC8.3.3.a, SC8.3.3.b, National – 5D/M4, 5E/M1a
NGSS – MS-L52.B.1, HS – L52.B.2

B I N G O

B	I	N	G	O
 dandelion	 berries	 butterfly	 deciduous tree	 log
 soil	 conifer tree	 chipmunk	 flower	 moth
 squirrel	 invasive species	Free!	 moon	 snow
 nest	 spider web	 spider	 3 birds	 rabbit
 large rock	 animal tracks	 earthworm	 beetle	 ant

B I N G O

 acorn	 deciduous tree	 large rock	 invasive species	 dandelion
 log	 fallen leaves	 spider	 rabbit	 earthworm
 snow	 flower	Free!	 butterfly	 squirrel
 moon	 pine cone	 chipmunk	 beetle	 berries
 grass	 ant	 tree bark	 nest	 soil

B I N G O

 chipmunk	 conifer tree	 moth	 snow	 large rock
 dandelion	 fly	 ant	 flower	 fallen leaves
 butterfly	 squirrel	Free!	 invasive species	 grass
 animal tracks	 spider	 pine cone	 nest	 log
 soil	 3 birds	 beetle	 berries	 rabbit

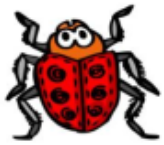
B I N G O

 beetle	 grass	 moth	 log	 fallen leaves
 nest	 snow	 butterfly	 flower	 chipmunk
 rabbit	 mushroom	Free!	 nest	 ant
 soil	 3 birds	 squirrel	 animal tracks	 conifer tree
 invasive species	 fly	 pine cone	 acorn	 dandelion

B I N G O

 animal tracks	 log	 rabbit	 snow	 nest
 3 birds	 soil	 tree bark	 conifer tree	 fallen leaves
 nest	 acorn	Free!	 dandelion	 large rock
 earthworm	 butterfly	 spider	 invasive species	 ant
 beetle	 pine cone	 spider web	 fly	 chipmunk

B I N G O

 berries	 tree bark	 butterfly	 nest	 acorn
 log	 3 birds	 pine cone	 rabbit	 beetle
 moth	 spider	Free!	 deciduous tree	 fly
 ant	 mushroom	 flower	 conifer tree	 soil
 dandelion	 moon	 chipmunk	 fallen leaves	 grass

B I N G O

 rabbit	 nest	 animal tracks	 log	 large rock
 earthworm	 squirrel	 fallen leaves	 spider web	 butterfly
 spider	 fly	Free!	 ant	 flower
 soil	 3 birds	 acorn	 beetle	 tree bark
 deciduous tree	 invasive species	 snow	 moth	 chipmunk

B I N G O

B	I	N	G	O
 moth	pine cone	 butterfly	nest	 beetle
invasive species	 animal tracks	 rabbit	 flower	 spider web
 large rock	soil	Free!	moon	fallen leaves
 acorn	 ant	 deciduous tree	 log	 fly
 squirrel	 chipmunk	nest	3 birds	 spider

Call List

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1  ant	2  beetle	3  chipmunk	4  3 birds	5  butterfly	6  squirrel	7  moon	8  pine cone
9  dandelion	10  spider web	11  grass	12  deciduous tree	13  earthworm	14  log	15  conifer tree	16  tree bark
17  rabbit	18  snow	19  soil	20  acorn	21  fallen leaves	22  large rock	23  animal tracks	24  berries
25  moth	26  mushroom	27  nest	28  invasive species	29  spider	30  flower	31  nest	32  fly

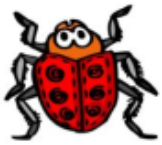
B I N G O

 dandelion	 frog	 caterpillar	 bee	 deciduous tree
 mushroom	 rabbit	 snake	 spider web	 stick
 chipmunk	 spider	Free!	 conifer tree	 butterfly
 moth	 acorn	 earthworm	 large rock	 ant
 dragonfly	 berries	 fly	 grass	 animal tracks

B I N G O

 mushroom	 flower	 frog	 earthworm	 spider web
 deciduous tree	 spider	 caterpillar	 butterfly	 dragonfly
 squirrel	 snake	Free!	 log	 large rock
 animal tracks	 berries	 moth	 ant	 stick
 rabbit	 bird	 conifer tree	 acorn	 dandelion

B I N G O

 moth	 stick	 rabbit	 bird	 caterpillar
 frog	 spider web	 spider	 bee	 squirrel
 large rock	 log	Free!	 earthworm	 butterfly
 chipmunk	 grass	 beetle	 ant	 dragonfly
 flower	 acorn	 mushroom	 animal tracks	 conifer tree

B I N G O

 fly	 flower	 snake	 butterfly	 large rock
 rabbit	 dandelion	 spider	 ant	 log
 bird	 bee	Free!	 frog	 berries
 chipmunk	 stick	 earthworm	 spider web	 deciduous tree
 mushroom	 caterpillar	 grass	 conifer tree	 squirrel

B I N G O

 log	 beetle	 butterfly	 dandelion	 stick
 conifer tree	 bee	 large rock	 acorn	 moth
 dragonfly	 squirrel	Free!	 bird	 frog
 flower	 ant	 caterpillar	 snake	 grass
 spider web	 earthworm	 rabbit	 mushroom	 chipmunk

B I N G O

 grass	 rabbit	 caterpillar	 snake	 large rock
 berries	 bird	 chipmunk	 dandelion	 squirrel
 mushroom	 bee	Free!	 log	 beetle
 spider	 flower	 dragonfly	 frog	 moth
 spider web	 animal tracks	 earthworm	 fly	 stick

B I N G O

 spider	 fly	 moth	 earthworm	 caterpillar
 frog	 bee	 ant	 animal tracks	 squirrel
 bird	 acorn	Free!	 dandelion	 snake
 spider web	 butterfly	 dragonfly	 log	 flower
 beetle	 berries	 rabbit	 large rock	 mushroom

B I N G O

 beetle	 earthworm	 rabbit	 mushroom	 bird
 acorn	 butterfly	 spider web	 dragonfly	 flower
 berries	 chipmunk	Free!	 stick	 snake
 bee	 fly	 spider	 caterpillar	 animal tracks
 log	 dandelion	 frog	 large rock	 ant

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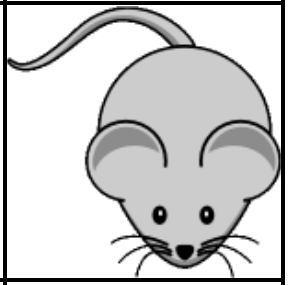
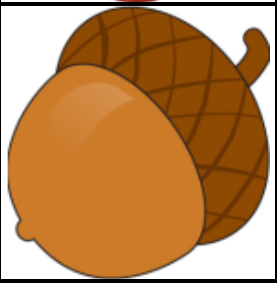
1  caterpillar	2  bird	3  squirrel	4  berries	5  grass	6  beetle	7  acorn	8  earthworm
9  chipmunk	10  mushroom	11  dragonfly	12  frog	13  stick	14  animal tracks	15  fly	16  log
17  flower	18  snake	19  spider	20  deciduous tree	21  large rock	22  ant	23  spider web	24  rabbit
25  conifer tree	26  dandelion	27  bee	28  moth	29  butterfly			

B I N G O

				
				
		Free!		
				
				

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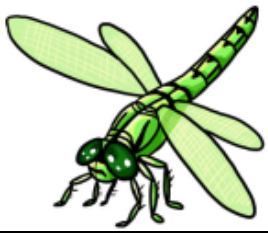
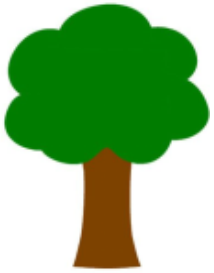
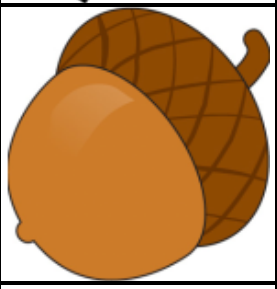
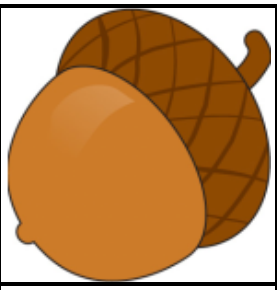
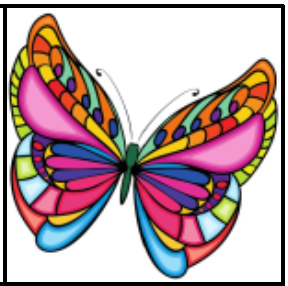
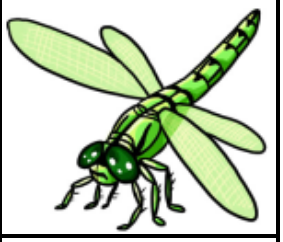
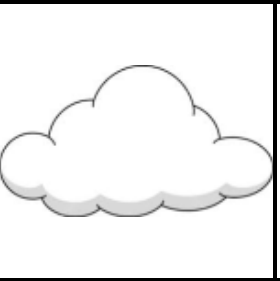
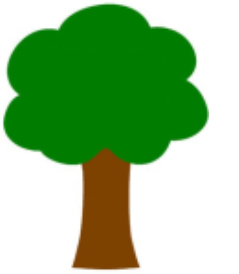
				
				
		Free!		
				
				

B I N G O

				
				
		Free!		
				
				

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		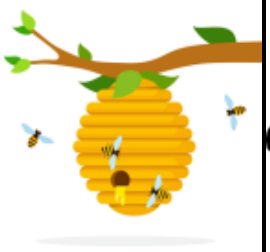		
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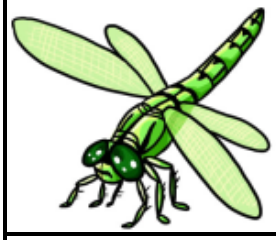		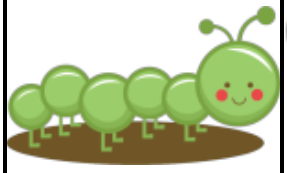	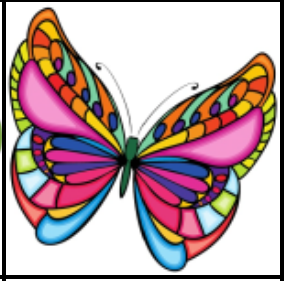	
		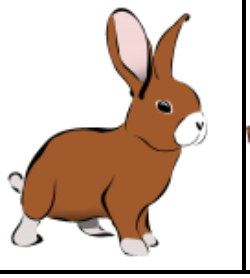		

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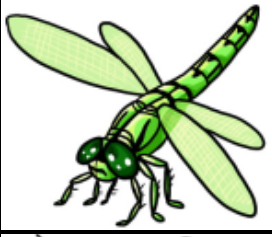
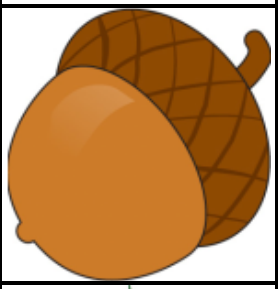
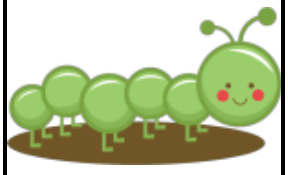
		Free!		
				
				

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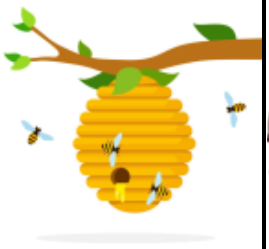
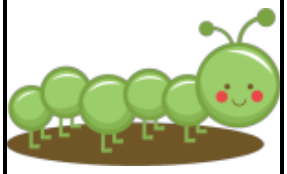
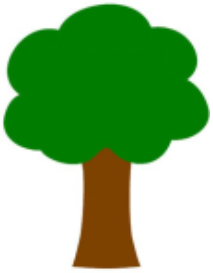
				
		Free!		
				
				

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				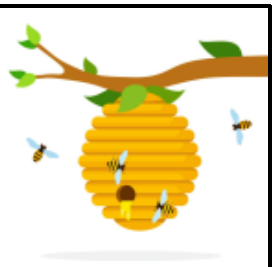
			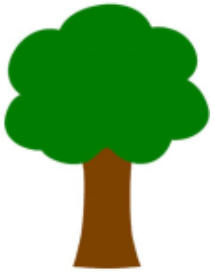	
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	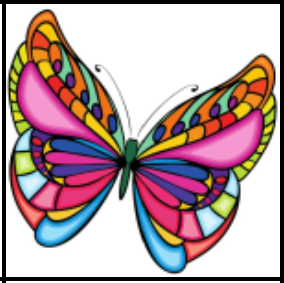			
				

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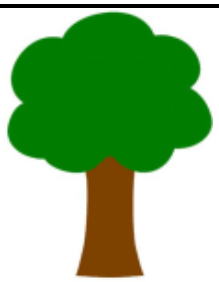				
				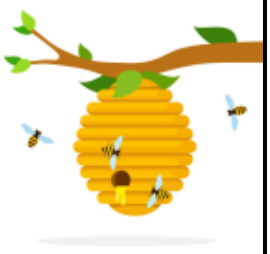
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	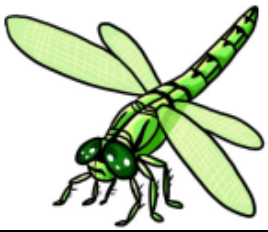			
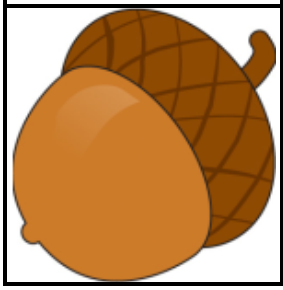			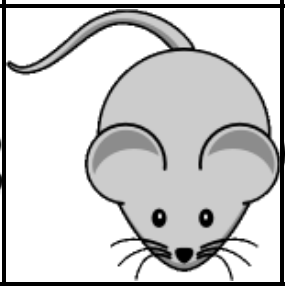	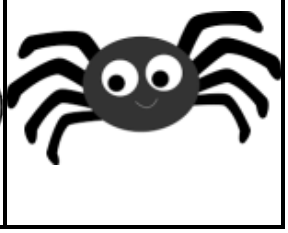

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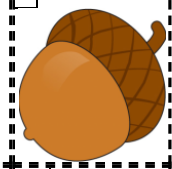
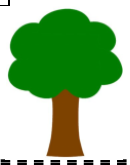
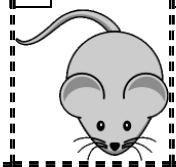
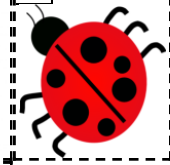
1 	2 	3 	4 	5	6 	7 	8 
9 	10 	11 	12 	13 	14 	15 	16 
17 	18 	19 	20 	21 	22 	23	24 
25 	26 	27 	28 	29 	30 	31 	32 
33 	34 	35 	36 	37 	38 	39 	40 
41 	42 	43 	44