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Ideas With IMPACT

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STEAM Comes Alive Outdoors

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Goals and Objectives

As students and teachers return to school under difficult circumstances, the students are stressed and not working to the best of their ability. Outdoor classrooms promote learning, mental health, physical health, reduces screen time, and allows students to connect with nature.

My goal as the classroom teacher was to provide a relaxing, fun, and engaging learning environment. So, I decided to take my classroom outdoors!

The main objective was to adapt our existing lessons to an outdoor environment where the students would be able to relax and engage in lessons stress-free. The students were able to participate in hands-on learning experiences and walk away from the computer screens.

Florida Standards

Third Grade:

Science:

SC.3.N.1.1 Question, Investigate and Explain

SC.3.N.1.2 Compare Observations, Explain Differences

SC.3.N.1.3 Record Keeping, such as pictorial, written, or simple charts and graphs of investigations conducted.

SC.3.N.1.6 Inferences based on observations

Fourth Grade:

Science:

SC.4.N.1.1 Question, Investigate and Explain

SC.4.N.1.2 Compare Observations, Explain Differences

SC.4.N.1.3 Record Keeping, such as pictorial, written, or simple charts and graphs of investigations conducted.

SC.4.N.1.6 Inferences based on observations

Fifth Grade:

Science:

SC.5.N.1.1 Question, Investigate and Explain

SC.5.N.1.2 Compare Observations, Explain Differences

SC.5.N.1.3 Record Keeping, such as pictorial, written, or simple charts and graphs of investigations conducted.

SC.5.N.1.6 Inferences based on observations

Course Outline/Overview

As teachers and students are adapting to new norms and requirements an outdoor classroom is essential. Outdoor classrooms promote not only fun learning, but mental and physical health, reduces screen time, encourages creativity, and allows our students to connect to nature. As we returned to school, I realized how important it was for my students to take a step back from computers and experience hands-on learning. I began to adapt lessons that would allow me to take my classroom outdoors. Our school grounds are perfect to create those outdoor classrooms, either you have an existing garden, a tree which provides shade, or you can install shades to create that outdoor classroom. (Make sure that among the supplies and materials for your outdoor classroom you include hand-sanitizer and disinfectant wipes to clean all materials.)

I started by taking the students out to read and started incorporating other lessons into our outdoor time. The class uses the outdoor classroom at least once a week, lessons are started in the classroom and continued outdoor. Some days we can be outside an hour, others no more than 20 minutes due to the weather (flexibility is crucial). Most of the lessons incorporate hands-on activities which

provide and alternative way of grading the students it has also allowed us to incorporate many of the STEAM components into our lessons. But the greatest advantage was to allow the students to connect to nature, each other, and disconnect from the computer!

Lessons

Weave A Living Food Chain!

Grades – 1st-5th **Subject** – Science

Topic – Living organisms and Interdependence

Lesson: Food Chains and Food Webs

Lesson Focus and Goals: All living things, plants, and animals, need energy to live. Spring flowers need energy to grow and bloom. Birds need energy to move their wings for flight. People need energy for all kinds of things, from thinking to laughing to playing soccer to sleeping. All living thins get their energy from food. Green plants use energy from the sun to make their food. Animals get their energy by eating plants and other animals. The sun is at the beginning of every food chain. A food web is mote complex than a food chain. It is made of many interconnected food chains within a community. Here ae a few food chains that together make a food web.

Learning Objectives: In this lesson, students will be creating an active food web with a ball of yarn and their bodies.

Materials Needed:

- Photocopy of the plants and animals
- Ball of yarn
- Index cards
- Glue

Activity:

- Make copies of animals and plants to cut and paste on to the index cards (don't forget the sun). Have the students choose one card each

and tape or pin it to the front of their shirt. (Be sure that someone is the “sun”.)

- Form a circle, with the sun standing at the center. Have every child introduce themselves as the plant or animal they represent.
- Ask the kids: Who in the circle would I give my energy to? (Who might eat me?) Who in the circle could give me energy? (Whom could I eat?)
- Explain that the ball of yarn represents energy from the sun. Ask the “sun” to hold onto the loose end of the yarn and toss (or walk) the ball of yarn to someone who can use that energy (a green plant). When the kid representing the green plant has the ball of yarn, they toss the yarn to someone next in the food chain.
- Keep going until the yarn reaches the animal at the top of the food chain (a carnivore – an animal that eats other animals).
- You’ve completed one food chain! Return the yarn to the sun and start a new chain and continue making food chains until every kid is holding at least one piece of yarn.
- Ask the kids: Have we made food chains? (Yes, many!) What do all our food chains together look like? (A food web.) Who is holding the most pieces of yarn and why? (The sun because every food chain starts with the sun.) What else is part of many food chains? (Green plants.)

Materials

Trade Quest Letter Size Clipboard Low Profile Clip Hardboard (Pack of 30) $29.95

Kindermat Floor Disks/Seats, Story Time Cushions for School, 16” Wide by 2” Thick, 4 Pack $49.99

American Plastic Toys APT-13150-6PK Children's Scoop Rocker Chair for Reading and Gaming, Red and Blue (6 Pack) $90.00

Magnetic Mobile Double-sided Whiteboard $124.99

Resources

Lesson Plans – National Wildlife Federation (A special Thanks to Maria Elena Garcia, for her support with this project.)

Materials - Amazon

Habitat Hunt Lesson

Summary:

Students assess the schoolyard (or nearby park) as a habitat for local wildlife.

Grade Level: 3-5

Time: 2 class periods (60 minutes)

Subjects: Science, Geography Skills: Observation, description, analysis, research

Learning Objectives

Participants will be able to:

- Locate habitat elements on the schoolyard
- Assess the schoolyard's potential as a suitable habitat for a specific animal
- Identify an area of the schoolyard that would include the most habitat elements for a specific animal

Materials:

- Pictures of local wildlife
- Construction paper or flagging tape (4 colors)
- String (and/or masking tape)
- Single-hole punch
- 4 colors of chalk or dry-erase markers
- Scissors
- Journal
- Pencil
- Tools for observing wildlife:

field guides, binoculars, hand lenses (optional)

- Habitat Hunt worksheet (provided)
- Field Guides or INaturalist/SEEK apps.

Background

In order for an animal to survive as a species, it must be able to find adequate habitat that provides food, water, cover, and a safe place to raise its young. The amount and quality of these needs vary a great deal from species to species. It may be that your schoolyard already has adequate habitat for some animals—students may have seen squirrels romping around in nearby trees, or have heard songbirds in the spring. This activity may answer questions as to what these animals are finding in your schoolyard, and what they and other species may lack. Identifying and locating the elements already present on school grounds represents the first step in restoring wildlife habitat. From there, you will better understand ways to attract and help support a wider variety of local wildlife.

Preparation

Cut construction paper into "flags" (a rectangular quarter of a page) and punch a single hole in the top, or set out materials for students to do this during class time. Alternatively, provide 4 colors of flagging tape. Each student, should have 4 flags, one of each color. Designate one color for food, one for water, one for cover, and one for places to raise young. If necessary, have students label each of the flags.

Procedure

1. Review the four basic elements of habitat and the importance of each for animal survival.

2. Pass out the Habitat Hunt worksheet. Tell students they will complete these during an exploration of the school grounds. (If the area to explore will be limited to certain sections of the school grounds, state the boundaries of the area). They will look at the school grounds as if they were a local animal species in search of habitat.

3. Have students choose a local animal species common to the area. Using field guides or storybooks, identify the types of food, water cover and places to raise young that their animal requires.

4. Pass out construction paper flags so each student has one flag of each color. Tell students they will use the flags to tag the area where a habitat element for their animal is located on the school grounds. One color represents food, one represents water, one cover and the other places to raise young. Have the student write the name of their species on each flag so they will be able to tell them apart from those of other students. Have them cut string and punch a hole in each flag (if not already done) so they can tie flags outside.

5. While students are outside, they will need to think about the following:

- In order to survive, all animals need food, water, cover and a safe place to raise their young.
- When outside, take a look around you. Do you see the necessary habitat elements for the animal you have chosen to survive here? Spend some time exploring this area. Look for all the characteristics of habitat that meet your specific needs. Based on what you find, you will decide to stay and call this area "home" or continue to look for a new place to call home.
- Describe the four elements of habitat you found that meet your needs:

  Food

  Water

  Cover

  Places to Raise Young
- Note where you found each element. Are they spaced close together or spread out over the school grounds?
- Decide whether you (as the animal) would stay and set up home here. Why or why not? What other habitat elements would need to be added for you to stay here?

6. Before going outside, review any safety rules with the class. If the area is too large, consider setting up boundaries for the activity. Depending on the age range, have students stay together as a group, or allow them to investigate the school grounds on their own. They are searching for a new habitat for their animal, but first they must identify which of the four basic habitat elements are on school grounds. As they explore the schoolyard in the role of the animal, students will use the different colored flags to identify as many habitat elements as they can find for their animal. These may vary for different animals and not all the students are likely to locate all four elements for their animals.

7. After they place each flag, participants will use the Habitat Hunt worksheets and/or student journals to record what and where they found all or some of what they need to survive. While outside, be sure to help students if they feel unable to identify the elements.

8. Once all students are finished, tour the schoolyard together and collect the flags. Discuss the habitat elements each flag signals. After the exploration, have the class assess its findings. If possible, use chalkboard (a dry-erase board or overhead and transparency will work as well) to draw a simple map of the area explored during the activity. Have each child come to the board and add the location of the elements they flagged to the map. Each element should be represented by a different color of chalk (or marker). As a class, discuss the map. Which areas on the schoolyard have the most habitat elements? How many different species might each section support? Ask each student to decide if the schoolyard would be part or all of their animal's habitat. What habitat elements may need to be added to enhance or create adequate wildlife habitat?

Modifications for Older Students

Have participants put the information they discover directly onto maps, rather than using flags.

Extensions

Challenge students to think about how the availability of certain habitat elements may change through the seasons. Would water be more difficult to get for wildlife in summer or winter? Are small streams, ponds and puddles they may have seen available for wildlife all the time? What about food? Assessment Have students write a short essay describing their findings in the schoolyard and how the area meets and does not meet their animal's needs. How would the schoolyard need to change to become a better habitat? You may want to instruct younger students (K-3) to draw pictures of their animals' habitat needs

Habitat Hunt Worksheet

You are a _____. In order to survive you need Food, Water, Cover, and Places to Raise Your Young. Explore the schoolyard. Describe the habitat elements you find and where you find them. Then, decide whether or not you could stay and make your home here.

Food Source:

_____

_____

_____

Water Source:

_____

_____

_____

Cover:

_____

_____

_____

Places to Raise Young:

_____

_____

_____

Questions:

1. Will you stay and make your home here?

_____

_____

2. Why or why not?

_____

_____

_____

_____

3. What other habitat elements would you like to see here?

_____

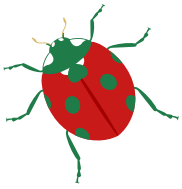
_____

_____

_____

_____

Design a Bug Hotel



Learning Goal:

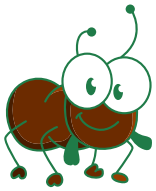
I am learning to outline and define the needs of insects in my local environment.

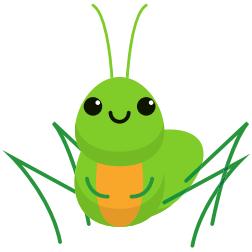
Task:

After researching what beneficial insects are in your local area (and their habitats), choose one or two that you will design a home for. Consider their needs (food, water, shelter & places to raise their young) in your design and the recycled materials that you could use to make a sustainable bug hotel.

Evaluation Criteria:

1. Include the needs of your creature in your design
2. Record and label your design with features
3. Use sustainable resources in your design text

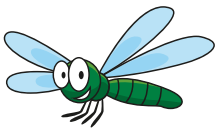




Bug Hotel Investigation

What is a bug hotel?

What is the purpose of a bug hotel?



What things do you need to consider when creating a bug hotel?

What are some recycled materials you could use to build a bug hotel?

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Bug Hotel Design

Write the name of the insect (s) for which you are designing this hotel for:

_____

Draw your design

List the most important elements of your design:

_____ _____

_____ _____

_____ _____

Bug Hotel Reflexion

What elements of your design worked?

What elements of your design did not work?

Have you observed any insects moving into your bug hotel? If yes, which ones? If not, why do you think insects are not visiting your hotel?

_____

_____