Backyard Bugging

Written by ***Heather Nisbett-Loewenstein***

Teacher's Guide

Grade Level: PS-3
Subject Areas: Science

Objectives and Goals

- Science objectives
    - Taking Action on Toxics and Chemical Safety
        -
    - Students will learn about insects
        - Metamorphosis
        - Details about some common insects
        - Students will discuss what defines an insect
            - Head, thorax, abdomen
            - Six legs
            - Two antennae
            - Often wings are present
    - Students will discuss native plants and how to use them in a garden to promote biological diversity
    - Students will learn about watersheds and how their activities can prevent local water pollution.
- Life Skill objectives
    - Students will learn to analyze problems and apply solutions
    - Students will learn that working together will often help to solve problems.

Required Materials and Equipment

- Teacher reference sheets
    - Grow Native list of best native plants for butterflies
    - Why Grow Natives from Grow Native
    - What Makes a Plant Native from Grow Native
    - EPA Pesticides Reduction Worksheet
    - Certified wildlife habitat application from National Wildlife Federation
    - Hummingbird flyer from Lakeside Nature Center
    - Insect information sheet from Lakeside Nature Center

    - Metamorphosis information sheet from Lakeside Nature Center
    - Watersheds and Drainage Basins from United States Geological Service
    - Articles on Ocean Garbage Patches
        - North Atlantic Garbage Patch
        - Indian Ocean Garbage Patch
        - Great Pacific Garbage Patch
- Student Sheets
    - Painted Lady Coloring Sheets from StoneLion Puppet Theatre
    - Insect Word worksheet from Enchanted Learning
    - Create Your Own Insect from HaveFunTeaching.com
    - Handout – Clean up after your pet
    - Handout – Storm Drains aren't garbage drains

Anticipatory Set

- Discuss why a native garden is a good idea
    - Beautification
    - Storm-water Management
    - Wildlife Habitat
    - Less Maintenance
- Discuss why natural insect control may be beneficial
- Ask students how they can help local wildlife
    - Creating a backyard environment
    - Controlling pets
    - Limiting use of pesticides
- Discuss how local actions can affect the local and region-wide pollution
- Explore how to work in a group to achieve a goal

Direct Instruction

- Using the Insect Information sheet from Lakeside Nature Center, discuss 'what is an insect?' and why insects are vital to our daily lives.
- Using the Grow Native sheet "What Makes a Plant Native", discuss native gardens and their benefits.
- Discuss the best plants for hummingbirds and butterflies

Guided Practice

- Painted Lady Coloring Sheets from StoneLion Puppets
- Insect Word worksheet from Enchanted Learning
- Create Your Own Insect from HaveFunTeaching

Watch performance of ***Backyard Bugging***

Standards Fulfilled

Missouri Science Standards

Kindergarten – Grade - Grade Level Expectations

LO: 1-D-K-a: Observe and compare the structures and behaviors of different kinds of plants and animals

Grade 1 – Grade Level Expectations

LO: 1-A-1-a: Identify the basic needs of most animals

LO: 1-A-1-b: Identify the basic needs of most plants

Grade 2 – Grade Level Expectations

IN: 1-A-2-a: Pose questions about objects, materials, organisms and events in the environment

St: 3-A-2-b: Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member

- Discussion of the various reasons that an animal or plant survives in a native garden

Grade 3 – Grade Level Expectations

EC: 2-A-e-b: Classify populations of organisms as producers or consumers by the role they serve in the ecosystem

- Discuss the role of the various animals in the native garden

EC: 2-A-3-d: Predict the possible effects of removing an organism from a food chain

LO: 1-A-3-a: Describe the basic needs of most plants (i.e., air water, light, nutrients, temperature)

St: 3-A-2-b: Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member

- Discussion of the various reasons that an animal or plant survives in a native garden

Grade 4 – Grade Level Expectations

EC: 1-A-4-a: Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism)

Kansas Science Standards

Kindergarten Standards – Life Science

3.0 The student will begin to develop an understanding of biological concepts.

3.1.1: The student discusses that organisms live only in environments in which their needs can be met
3.1.3: The student observes living things in various environments.

Grade 1 Standards – Life Science
3.1.1: The student discusses that organisms live only in environments in which their needs can be met
3.1.3: The student observes living things in various environments.

Grade 2 Standards – Life Science
3.1: The student will develop an understanding of the characteristics of living things
3.1.1: The student discusses that organisms live only in environments in which their needs can be met

Grade 3 Standards – Life Science
1.1.1: The student asks questions that he/she can answer by investigating
1.1.4: Begins developing the abilities to communicate, critique, analyze his/her own investigations, and interprets the work of other students.
3.1.2: Compares basic needs of different organisms in their environment.

Grade 4 Standards – Life Science
1.1.1: The student asks questions that he/she can answer by investigating
1.1.4: Begins developing the abilities to communicate, critique, analyze his/her own investigations, and interprets the work of other students.
3.1.2: Compares, contrasts and asks questions about life cycles of various organisms

Iowa Science Standards Fulfilled

Kindergarten Standards
K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.
K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool

Grade 1 Standards

1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool

Grade 2 Standards

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool

Grade 3 Standards

3-LS2-1. Construct an argument that some animals form groups that help members survive.

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change

Grade 4 Standards

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*

Grade 5 Standards

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Nebraska Science Standards Fulfilled

Kindergarten Standards

SC2.3.1.b Identify the basic needs of living things (food, water, air, space, shelter)

SC2.3.4.a Recognize seasonal changes in animals and plants

SC2.4.2.b Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling

Grade 1 Standards

SC2.3.1.b Identify the basic needs of living things (food, water, air, space, shelter)

SC2.3.4.a Recognize seasonal changes in animals and plants
SC2.4.2.b Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling

Grade 2 Standards

SC2.3.1.b Identify the basic needs of living things (food, water, air, space, shelter)
SC2.3.4.a Recognize seasonal changes in animals and plants
SC2.4.2.a Describe Earth materials (sand, soil, rocks, water)
SC2.4.2.b Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling

Grade 3 Standards

SC5.3.1.b Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect move, root of a plant helps the plant obtain water)
SC5.3.3.d Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live

Grade 4 Standards

SC5.3.1.b Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect move, root of a plant helps the plant obtain water)
SC5.3.3.d Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live

Grade 5 Standards

SC5.3.1.b Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect move, root of a plant helps the plant obtain water)
SC5.3.3.d Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live