Lesson Title: Fourth Grade Overnight at Hawk Woods Nature Center

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Target Grade/Subject: Fourth Grade Science

Duration: Two full school days with night in between

Lesson Overview: Students experienced an overnight campout at Hawk Woods Nature Center in Auburn Hills, Michigan. They went hiking in the woods, explored two types of a pond ecosystems, cooked using solar energy, had a bonfire, and learned about wildlife of Michigan. Using tools such as butterfly nets, magnifying glasses, insect jars, and binoculars, the students made observations about the world around them. Solar energy, heat and energy, ecosystems, and plants and animals are all part of the fourth grade curriculum.

Sources Consulted: Mike Mansour, Hawk Woods Nature Center
Hands-On Nature
Michigan Grade Level Content Expectations

Student Learning Objectives:

Students will use various sources of energy to cook food such as solar ovens and bonfires.

Students will use a variety of scientific tools to explore the world around them.

Students will learn first-hand about the ecosystems at Hawk Woods Nature Center.

Students will use journals to write their thoughts and observations.

Grade Level Content Expectations addressed:

Solar Ovens, Bonfire, and S’mores

S.RS.04.11 Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.

P.EN.04.12 Identify heat and electricity as forms of energy.

P.EN.E.4 Increasing temperature of any substance requires the addition of energy

P.EN.04.42 Describe heat as the energy produced when substances burn...

P.CM.04.11 Explain how matter can change from one state to another by heating and cooling
Hiking and Pond/Woods Exploration

L.OL Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life which include the need for air, water, and a source of energy. Understand that all life forms can be classified as producers, consumers, and decomposers.

L.EV.04.21 Identify individual differences (color, leg length, size, wing size, leaf shape) in organisms of the same kind.

L.EC.04.11 Identify organisms as part of a food chain or food webs.

S.IP.04.11 Make purposeful observation of the natural world using the appropriate senses.

S.IP.04.12 Generate questions based on observations

S.IP.04.14 Manipulate simple tools that aid observations and data collection

S.RS.04.18 Describe the effect humans and other organisms have on the balance of the natural world.

**Materials Needed:**

*(Listed for a class of 25)*

25 Water Bottles

25 Magnifying glasses

25 Binoculars

25 Journals and pens

25 Flashlights

Paper towel—2 rolls

Napkins (500 count package)

100 paper plates

Plasticware (50 of each—wash between meals)

Plastic Cups (50—use if water bottle broken or lost)

Griddle or frying pans, spatulas, serving spoons, serving plates

2-3 Coolers with Ice

Charcoal and lighter fluid

Butterfly Nets (at least 1 per pair of students)
Clear Plastic Containers (to collect creatures to observe and then release)
Solar Ovens (4-6) (for pizza bagels)
Lanyard lacing and hooks
Beads
Marshmallows (at least 4-6 per student)
Graham crackers (2 large per student)
Chocolate (1/2 bar each student)
Bagels (1 per person)
Pizza sauce (2-3 cans)
Pepperoni (4 per student)
Pancake mix
Sausages (precooked, heat and serve—2-3 per student)
Fruit (2-3 apples, oranges and bananas per student)
Hot Dogs and Buns (2-3 per student)
Hamburgers and Buns (1 per student)
Canned Corn
Baked Beans
Trail Mix
Lunch Meat
Bread
Ketchup
Mustard
Relish
Gogurt

**New Vocabulary:**

- Invasive species—an organism in an ecosystem that has been introduced from another area
- (garlic mustard plants, phragmites)
- Solar Power—use of the sun’s energy
Ecosystem—the complex of a community and its environment functioning as an ecological unit in nature

**Focus Questions:**

How do you think Hawk Woods will be the same or different from your back yard?

What are some types of energy you would use to cook food at home? (gas, electric, microwave)

**Field Activities:**

10-11:30 Arrive, set up cabins, go over rules as a group

11:30-12:30 Lunch and journaling (sack lunches)

12:30-1:00 Hang out at cabins and bathroom break

1:00-2:30 Hike on Marsh Boardwalk and pond exploration (binoculars, nets, clear buckets, magnifying glasses)

2:30-3:30 Pizza Bagels in Solar Ovens (solar ovens, napkins, bagels, pizza sauce, cheese, pepperoni)

3:30-4:15 Plaster Tracks at Nature Center (rubber molds, plaster, water)

4:15-6:00 Free Time in pairs or groups

  - Journaling
  - Hiking
  - Pond exploration (from water’s edge only)
  - Play outdoor games or do crafts (hula hoops, balls, lanyards, etc.)

  - Help with Dinner

6:00-8:00 Dinner and Free Time (Hamburgers, hot dogs, etc)

8:00-10:00 Bonfire—all must attend (s’mores, hot dogs) singing, raps, stories

10:30 Lights out

7AM-9AM Wake up on own—hike, explore, traveling breakfast (table set up with fruits, granola bars, juice, and snacks to eat on own)

9:00-10:00 Pancake and Sausage breakfast

10:00-11:00 Pack up and clean out cabins

11:00-12:00 Nature Center—pick up tracks, see snakes and turtles

12:00-1:00 Light Sandwich Lunch and DEPARTURE
**Solar Ovens**—pizza sauce, cheese, pepperoni, and bagels—prepare pizza bagels and cook in a solar oven

**Hike and Pond Exploration**—walk around the marsh boardwalk and learn about the wildlife in the area. Pick garlic mustard plants to keep the invasive species from taking over. Observe the pond from the water’s edge, then take shoes and socks off to explore the shallow water with butterfly nets.

**Bonfire**—take extra precaution with students around fire. Most have not experienced this.

**Journaling**—Give students choices of topics to write about. (How they feel about camp. What they are surprised about compared to what they expected. What their favorite activity is. How camp compares to their city life.)

**Assessment:**

Photographs showing students exploring the outdoors

Oral communication during exploration times

Journal Entries

Thank you letters when finished that contain at least three things the students learned or experienced that were new to them.

**Reflection**

Out of the 24 students who went on the campout, over half of them had never experienced having a bonfire. Extra precaution must be taken when roasting marshmallows, adding wood to the fire, and even sitting around the campfire. Make sure students are always in pairs and tell an adult where they are going before leaving the immediate campsites area. Allow for a flexible (lead by student interest) schedule, but have more than enough planned to keep students busy and engaged. We started with a very tight schedule that broke students into groups to experience as much as possible, but as the day went on we kind of tossed it aside and let them choose what to do as long as it was outdoors. The schedule above is a rough outline of what we did mostly follow.