

Start Up: (5-10 min) **Fungus Tangle**-Encourage early arrivals to try **The Pretzel** (Sanborn) again. Mushrooms, pieces of rotting logs, leaves with fungus, a spore print.

Welcome/Introduction: Staff/Volunteer Names
1 min. **Today's Topic-Magnificent Mushrooms**
Question: How is a mushroom like a plant and not like a plant?

Opener: 10 min. Play **Mushroom Freeze Tag**-Choose a student to be "It". "It" runs after students. When tagged, they are turned into mushrooms and can't move until touched by another untagged player. Use several "its" for a larger group of students.

Background/Exploration: 40 min. Ask the students what they think a mushroom is? How does it live and grow?
A fungus is made of a bunch of threadlike hairs that suck up moisture and minerals from the soil, or dead/decaying plants and animals.
A mushroom is the part of a fungus we see. It is like a flower on a plant.

Plants vs. Fungus-

- ♣ Plants are green and can make their own food from sunlight.
- ♣ Fungi are not green, they cannot make their own food, but must absorb it like plant roots absorb water and minerals.
- ♣ Fungi are also like plants because they can't move.
- ♣ A mushroom grows from a fungus to spread spores, which make new fungi. Spores are not the same as seeds. Spores do not have baby plants in them, like seeds do.

Life Cycle-

- A fungal spore lands on the ground.
- Threads start to grow. The threads can get very long and become a thick mass in the soil, leaf litter, or in a log. They need moisture to grow.
- After awhile, the mass of threads make one or more mushrooms. The mushrooms come up when it is wet.
- The mushrooms dry out and release spores, which fall nearby or blow away to grow new threads somewhere else.

5 min. **Fungi in our lives** (see below)-Sometimes mushrooms are in stories, like fairy tales. There are fungi that are good for us, and fungi that are harmful.
Ask students to think of some good or bad fungi.

Write responses down on a white board or poster under "good for us"/"bad for us".

- There are many foods that are fungus, or are made with fungus.
- Some important medicines (penicillin) are made from fungus.
- There are also many garden plant and crop diseases that are caused by fungus, as well as some human illnesses.

Edible fungi-We eat many kinds of mushrooms-on steak, in stir fry, in cream of mushroom soup. There are button mushrooms, portabellas, and many other kinds you can get in your grocery store. What mushrooms have you eaten lately?

Activity: What fungus other than mushrooms have you eaten lately? (Students will say ‘none’.)
Fungus, yum! (see Fungi in Our Lives, below)-
Show students containers from foods that are made with and/or contain yeast or fungus. Have them guess what the fungus does to help make that food. (yeast makes bread rise, cultures thicken yogurt, etc.)

Forms of fungi-Mushrooms, mildew, rust, smut, mold, yeast
There are different shapes and colors of mushrooms-Caps, cups, jellies, slimes...
Fairy Rings-Woodland cap fungus grows in rings, spreading out from the center.
Show some posters or pictures of different kinds of fungus and their mushrooms.

Prepare to go Outside: Restroom break.
10 min. Bring: Water bottles, hats, jackets (if necessary), clipboard/clip
Trail Rules (see The First Program).
What we will do/What to look for-Fungus/mushroom hike
Predictions-What colors and kinds of mushrooms or fungus will we find?

OUTDOOR EXPLORATION: Fungus/mushroom hike through a floodplain and/or wooded area.
1 hour, 30 min. Look for different shaped and colored fungus-shelf fungus, cup fungi, etc.
Roll over a few logs to see fungal threads growing under them.
Look at other dead/decaying trees and branches.
Show students the parts of a mushroom-cap, stalk, & gills

Fungus is very important in nature-

- ♣ Fungus helps decay/decompose plants and animals.
It can even break down wood and insect skeletons.
- ♣ When fungal threads break down and digest the plants animals, nutrients are made available for new plants to grow. This is called the nutrient cycle.
- ♣ Some fungus lives with plant or tree roots, helping them absorb water and minerals.
The fungus also gets some sugars from the roots that the plants made.
- ♣ Many insects and animals eat fungus-springtails, snails, slugs, beetles, flies.
- ♣ Some gnats use mushrooms for their homes.

Game: **Cycle Circle Game** (Caduto)-Briefly review the nutrient cycle with students.
10 min. Give each student a recycler name card to hang around their neck.
Seat the students in a circle.
One student takes a leaf and walks around the outside of the circle, dropping it behind another student, who picks it up and chases the first student, racing for the empty spot. (Basically, ‘Duck, Duck, Goose’ with decomposers/recyclers.)

Closing: Encourage students to find a mushroom in their yard, or other appropriate site, and make a spore print at home. Explain how to do this. Show the pre-made spore print.

Send Off: Goodbye!
1 min. **Next Month-Unusual Animals**

Take Home: Parent Outline
Spore print instructions
Spore print paper
Bread mold activity
Fungus pictures to color

Vocabulary

Fungus/fungi, mushroom, stalk, cap, gills, spore, yeast, mildew, mold, rust, culture, penicillin, decompose, decay, nutrient

Background and Activity References for Naturalists and Parents

www.nwf.org/kids/ National Wildlife Federation-nature information, activities for different ages

<http://calendar.yahoo.com/iowafungi> Prairie State Mushroom Club-public mushroom hikes, info.

An Iowa Supplement to Project Learning Tree: K - 8. 1993. Iowa Department of Natural Resources, Des Moines. P. 50-51 Fallen Log sheet and Investigation

Iowa's Mushrooms and Nonflowering Plants (IAN-306). 1994. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA.

<http://www.extension.iastate.edu/pubs/wi.htm> ISU Press website-can download pdf booklets

Caduto, M. J., and J. Bruchac. 1988. *Keepers of Life: Discovering Plants Through Native American Stories and Earth Activities for Children*. Fulcrum, Inc. Golden, CO. Pp. 76-89 fungi;

p. 85 ecosystem illustration w/fungi, etc.; pp. 78, 79 club fungi & mushroom parts illustrations

Caduto, M. J., and J. Bruchac. 1988. *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Fulcrum, Inc. Golden, CO.

Pp. 140-141 Nutrient cycle, Cycle Circle Game

Carlson, Laurie. 1993. *Ecoart! Earth-Friendly Art & Craft Experiences for 3-to 9-year olds*. Williamson Publishing, Charlotte, VT. P. 86 Spore Print Activity-good take home

Heller, Ruth. 1984. *Plants That Never Bloom*. Grosset & Dunlap, NY.

Hunken, Jorie. 1989. *Botany for All Ages: Discovering Nature Through Activities Using Plants*. The New England Wild Flower Society-The Globe Pequot Press, Chester, CT.

Lang, Susan S. 1995. *Nature in Your Backyard: Simple Activities for Children*. The Millbrook Press, Brookfield, CN. Pp. 42-43 Bread Mold Activity-good take home

Lingelbach, Jenepher. 1986. *Hands-On Nature: Information and Activities for Exploring the Environment with Children*. Vermont Institute of Natural Science, Woodstock, VT.

P. 100 Log Look

Extensions/Alternate Activities/Rainy Day

Encourage students to dissect a non-poisonous collected or store-bought mushroom.

Try to find the threads.

Have some edible (store bought) mushrooms for students to sample

Read a story with a fungus or mushroom in it.

Have students make models of a mushroom with clay or paper maché.

Show a diagram of the Nutrient Cycle (Caduto).

Do the **Fallen Log Investigation** (IA Supplement to Project Wild).



Fungi in Our Lives

GOOD or USEFUL FOR US

Yeast
Cultures in dairy products

Medicine-Antibiotics
Penicillin
Aureomycin

Edible Mushrooms
Button mushrooms
Portabellos
Chantarelles
Morels

Foods made with yeast or fungus (cultures):
Bread, rolls
Yogurt
Cheese

(beer)
(wine)

Decomposers break down dead stuff

Supplies:

Poster paper or whiteboard
Marker

Pictures of mushrooms/fungus
Pieces of rotting log, fungus examples

Advance Preparation:

Collect a mushroom or two and make a spore print overnight to show students

Spore Print Paper-Cut black construction paper to ¼ size of white computer paper. Cut the white paper in half, then tape the black paper over half of it, to make sheets for spore prints.

Send a black/white sheet with each student so they can try spore prints at home.

Copy and cut apart labels for the **Cycle Circle Game**.

String on yarn for hanging them onto students.

BAD FOR US

Athelete's Foot
Toenail fungus
Ringworm
Valley Fever

Poisonous Mushrooms
Amanitas
Little Brown Mushrooms

Crop/Plant diseases
Ergot-wheat
Oak Wilt
Corn Smut
Potato Blight
Chestnut Blight
Dutch Elm Disease

Mold
Mildew

Fungus, Yum!

Containers from food with fungus in it
Magnifying glasses or boxes
Fungus life cycle poster
White/black paper for spore prints



Card Nametags for Cycle Circle Game

LEAF

PLANT ROOTS

WORM

BEETLE

MITE

SPRINGTAIL

FUNGUS

SOWBUG

BACTERIA

MILLIPEDE

NEMATODE

ANTS

CRICKET

SNAIL

CENTIPEDE

FLY

