**Mushroom Prints**

**This lesson contributed by Cheryl Saam of the Leslie Science Center in Ann Arbor**

**Guiding Question**

***How do mushrooms reproduce?***

**Objectives**

|  |
| --- |
| photo of mushrooms |

**Concepts:**

* Organisms reproduce in different ways
* Mushrooms ([fungi](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab)) reproduce [asexually](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab), needing the spores from only one parent to reproduce

**Facts:**

* Mushrooms grow from fungi that live mostly underground.
* A fungus does not have chlorophyll, as plants do.
* Other fungi you may know are molds, rusts, mildews and yeasts.
* Mushrooms are [saprophytes](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab2) and, often, [parasites](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab2).
* Fungi are neither plants nor animals, but instead are members of their own separate Kingdom of living things.
* Mushroom-producing fungi are not plants. They have no [chlorophyll](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab) and can’t make their own food directly from sunlight. They *do* consume both live and dead plants for food.
* Many fungi live in symbiosis with other organisms, such as algae (lichens), plant roots (mycorrhizae), or insects such as ants.
* Instead of seeds, mushrooms have [spores](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab2) that drop to the ground from their [gills](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab).
* When the spores land on the ground they sprout [mycelia](http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/shroom.html#vocab) the same way a plant seed sprouts roots.

**Skills:**

* Observation skills
* Documentation skills
* Research skills
* Oral Presentation Skills

**Materials:**

Each person will need:

1. 1 fresh mushroom, either store bought or picked
2. 1 glass, cup or bowl large enough to fit over the mushroom
3. 1 sheet of plain white paper
4. Clear acrylic spray if you want to save the experiment design (optional)

**Room Preparation**

Everyone will need flat surfaces for their mushrooms and papers. This area must remain undisturbed for at least one hour.

**Safety Precautions**

Some mushrooms are poisonous! If you picked the mushroom outside, do not eat it.

**Procedures and Activity**

**Introduction**

1. Ask students what they think a mushroom is. Explain that mushrooms are not plants: they don’t have chlorophyll and can’t use the sun for energy.
2. Go over the parts and [life cycle of a mushroom.](http://www.swifty.com/apase/charlotte/lcycle.html)
3. This experiment demonstrates the spore liberation phase in the life cycle.

**Activity**

1. Pass out a mushroom, a piece of white paper, and a cup to each person.
2. Break off the mushroom stem so that the cap can be laid down fairly flat.
3. Lay the mushroom gill-side-down on the piece of paper.
4. Carefully cover the mushroom cap with the open end of the glass or bowl.
5. Let the mushroom sit for at least an hour, preferably overnight.
6. GENTLY lift the glass or bowl from the mushroom and VERY GENTLY lift the mushroom cap from the paper. You should see a beautiful radial design.
7. If you want to save the design, spray the paper with clear acrylic.

**Closing - Original Question**

**Ask again “How does a mushroom reproduce?”**

**Evaluation**

Ask students to share and compare their mushroom prints with each other. Ask questions to show that they know the parts and life cycle of a mushroom.

**Extension Ideas**

1. Research how organisms reproduce from both spores and seeds. In what ways are these two processes similar and how are they different?
2. Research the role that mushrooms and other fungi play in the overall ecosystem.
3. Check out some of these related web sites:
	* [Introduction to Fungi](http://www.ucmp.berkeley.edu/fungi/fungi.html)
	* [University of Michigan Fungus Collection](http://www.herb.lsa.umich.edu/)
	* [MycoElectronica - World of Mushrooms](http://www.mv.com/ipusers/dhabolt/dad/mushroom.html)

**Careers Related to the Lesson Topic**

* Biologist
* Mycologist

**Prerequisite Vocabulary**

**Asexual**

Showing no sexual differentiation (no male or female forms)

**Chlorophyll**

The green matter in plants. In the presence of sunlight, it converts carbon dioxide and water into carbohydrates that feed the plant

**Fungi** (singular: fungus)

One of the five kingdoms of life (animals, plants, fungi, protists, and monerans). Fungi were once thought to be plants but they have no chlorophyll and cannot make their own food. Instead, they dissolve and then absorb food.

**Gills**

The thin, leaflike radiating plates on the undersurface of a mushroom

**Mycelia** (singular: mycelium)

The vegetative part of a fungus made up of threadlike tubes

**Parasite**

A plant or organism that lives in or on another plant or organism

**Saprophyte**

An organism that lives on dead or decaying material

**Spore**

A small reproductive body, often consisting of a single cell, produced either asexually or sexually. They are highly resistant to environmental damage and are capable of giving rise to a new adult individual, either immediately or after an interval of dormancy.