

LESSON PLAN ON DECOMPOSERS.

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Class: 5th Grade

School: Montlieu Academy of Technology

Period: October 2011 - Jan 2012

This is a lesson plan that has already been taught and therefore parts of it will feature responses from students.

Activity and Concepts: Students will continue learning about different parts of the ecosystem. This lesson will specifically be looking on decomposers.

Process Skills: observing, classifying, inferring, communicating,

Materials: Mushroom log, greenhouse, camera and a trip to the Greenway!

Engage:

Approach: inquiry based.

The lesson started with questions

Question: What are decomposers?

Student response: NO ANSWER!!!

Question: What happens to plants and animals when they die?

Student response: they rot, they break down, they decompose

Question: So what is to decompose?

Student response: To rot or break down

The reason for these questions was to demonstrate to the students how complex the scientific terms may sound at first, yet the concepts behind them are sometimes very easy to explain.

From previous knowledge the students gave examples of decomposers as below:-

- Bacteria
- Fungi

Question: are decomposers useful in any way to humans?

Student response: NO!

Question: can we eat decomposers?

Student response: NO, NO, NO!

Explore.

Instructions: Go out to the greenway and collect samples of decaying matter. Carefully examine them for decomposers and bring them to the classroom.

Result: The class went to the greenway to look for decomposing matter. We found dead trees onto which molds and mushrooms had grown. The collected samples were taken back to the classroom for further discussions.



A fifth grade student on the greenway posing for a photo with a tree onto which decomposers have grown.



A mushroom growing on a tree on the greenway

While on the greeway we also noticed that although the textbook says that decomposers break down dead matter, mushrooms which we eventually classified as decomposers were growing on living trees!

Discovery: The students discovered that most of the dead and decaying matter had some other things growing on them. We hypothesized that these must be decomposers that were breaking down the dead matter.

Apparently some of the decomposers were mushrooms, so the same question posed earlier during the engagement session was repeated

Question: are decomposers useful in any way to humans?

Student response: I think so, some of the decomposers are mushrooms and although these ones that we collected from the greenway may be poisonous, I know that some mushrooms are edible.

Explanation:

- ❖ Indeed some decomposers are very useful.as we have seen, some can be used as food, in fact penicillin which is one of the famous medicines is from fungi, which are decomposers!
- ❖ Some decomposers such as certain bacteria can however cause diseases



A fifth grade student holding a dead piece of wood covered by algae



Mushrooms growing on leaves that had covered the floor of the forest on the greenway

At this point the abstract thought of eating decomposers was replaced by the knowledge that there are different types of decomposers, some of which are useful to us.

Explanation:

- ❖ Bacteria and fungi are decomposers and they break down waste products and dead organisms for food.
- ❖ Mushrooms belong to a class of decomposers known as fungi!
- ❖ Decomposers cannot make their own food.
- ❖ All living organisms are recycled in nature by decomposers.
- ❖ This recycling process is a continuous cycle in life.
- ❖ Organisms use energy and recycle the nutrients in an ecosystem.
- ❖ Food chains and food webs are used to recycle nutrients in the ecosystem. The activities of the producers, consumers, and decomposers assist in the recycling process.

TRANSLATING THE RESEARCH COMPONENT.

Introduction: Natural products research is a branch of science that deals with growing and extracting substances from plants. Natural products scientists test the extracted substances in search of medicines that can be used to cure diseases. In fact our next door neighbor to the research lab that I work in grows different types of mushrooms, mashes them, squeezes the liquids out of them and tests to see if the things contained in those liquids can be used to cure cancer.

Project: Learning how to grow mushrooms

Materials: Mushroom log. Kindly donated by Faucete Farms, Brown summit, NC

The log was presented to the students and they were asked to hypothesize what it could be used for.

Student response

- ❖ *Firewood*
- ❖ *Mulch*
- ❖ *Defense weapon*

The students were asked to examine it carefully and respond in a more acceptable scientific manner.

Student response

- ❖ *The log has some holes drilled on it and they look like they are filled with something.*

Explanation

- ❖ The logs are cut, dried, small holes drilled in them and filled with mushroom spores
- ❖ The mushrooms propagate through spores
- ❖ It is therefore expected that the log will produce mushrooms
- ❖ The students drenched log with water and stored in a dark greenhouse.
- ❖ After regular examinations, it was noticed that mushrooms were popping out of the log!



October 2011. The first day of the mushroom growing experiments. The students pose with a fresh mushroom log.



January 2012 After two months of keeping the log in a dark place, mushrooms grew out of the decomposing log

Evaluation through observations and later mushroom harvesting is going on

Assessment.

This assessment examines decomposers in the context of other concepts covered in class around the time of assessment/

1. Which of the following human actions cause the majority of disruption in an ecosystem?
 - a. gasoline emissions
 - b. farming
 - c. land development
 - d. eating meat

2. A truck carrying pesticides slipped off the road and into a lake. The pesticides were spilled in the lake. Which of the following events would **not** occur?
 - a. the fish in the lake would be poisoned
 - b. the water supply would be contaminated
 - c. death in animals can occur instantly upsetting the food web
 - d. the pesticides would quickly be removed from water

3. Which of the following cannot be recycled?
 - a. aluminum cans
 - b. tires
 - c. light bulbs
 - d. glass bottles

4. In the prairie ecosystem, where would fungi place in the food chain?
 - a. first level producers
 - b. decomposers
 - c. first level consumers
 - d. third level producers

5. In the food chain, which of the following receives their energy directly from the sun?

- a. producers
- b. consumers
- c. decomposers
- d. transfers

6. Which of the following does not have to be met by an ecosystem?

- a. temperature
- b. transportation
- c. water
- d. shelter

7. The components of an ecosystem consist of:

- a. only living things
- b. only non-living things
- c. both living and non-living things
- d. neither living or non-living things

8. Decomposers get their food by:

- a. eating plants
- b. eating other animals
- c. eating dead plants and animals
- d. eating bacteria

9. In a food chain, which of the following should there be more of, in order for all animals to survive?

- a. producers
- b. primary consumers
- c. secondary consumers
- d. decomposers

10. In a habitat, the top consumers, the large carnivores, get their food by:
- a. staying close to their home
 - b. often traveling to other parts or even outside of the habitat
 - c. changing the type of food that they hunt
 - d. hunting more than they can eat