

Digital Decomposition

Age Level: any age (6 and up)

Special Considerations: Alert the rangers and staff at KPT Non-Hunting area that you will be conducting this activity so that they will not dismantle your study plots for the duration of your study (5 days up to 1 month). The students will be learning how a forest changes over time and will make multiple observations of their study plots during multiple trips to the area.

Skills/Subject Areas: science, data collecting and recording, observation skills, art and technology. This activity can also be used as an excellent communication tool for ESL students when they discuss their results or share their data.

Eco-Concepts:

Cycles- nature works in cycles; the building materials for life must be used over and over again

Change- everything is in the process of becoming something else

Required Materials: sample worksheet included in this packet, yarn/string, sharpened sticks (satay sticks), digital camera and computer, data-recording sheet, clipboards and colored pencils

Prep Time: MEDIUM – a few hours are needed to set up study plots and download digital photos. A few class periods spread out over several weeks are required to make and discuss observations.

Goals:

Accurately sketch the living and non-living factors in the study plots

Observe how a forest changes over time

Effectively communicate the observations made during the activity

Hypothesize why the changes are taking place

Realize that the rainforest is dynamic and constantly changing

Vocabulary (see definitions below): quadrat, ecological succession, dynamic, flora, fauna, habitat, niche, erosion

Description:

Students have a natural curiosity and LOVE to go outdoors and explore; they also love computers and digital cameras. This activity allows them to enjoy both while providing a study focus for exploration and an excuse to go outside often!

Set up: For younger students, the teacher will need to set up and number study plots prior to taking the students outside. However, if the students are old enough it is optimal for them to choose a random location and set-up their own study plot.

The teacher can determine the size of the study plot prior to the activity. A 1m X 1m area is suggested.

In the classroom the teacher discusses the activity, places students into groups of 3-4, assigns the groups a study plot and passes out the data sheets to each student. While students are outside they observe, draw and record what they see inside their study plot.

Students also take digital photographs of the study plot for later comparison to the drawings. The outdoor observation is repeated several times (at least 3-5) during the course of a few weeks with new data sheets and photos each time. The end result is a series of photos and drawings that document the change that has taken place during the observation period.

Multiple observations, recording and photographing the study plots allows the students to realize how dynamic Nature is, nothing remains constant.

Hopefully, during the course of the activity new things will grow, ants will build homes, fungus will appear, the leaf litter will decompose or a twig may disappear to a bird building a nest, or a mushroom to a squirrel. Witnessing this first hand and recording it with both drawings and digital photos will allow students to make direct connections to their environment.

Discussions in the classroom will help students realize that they are part of an ever changing, highly dynamic living world.

Conducting the lesson in the field:

Teacher helps the students choose a random location for their study plot and set up their quadrat.

Teacher asks (possible answers):

Why is this a good area to study? (there are a lot of different plants here (diversity), it's near a stream or under a big tree (location), there is a big ant mound here (habitat) etc.)

What do you think you will observe during this experiment? (my quadrat will get disturbed or destroyed (weather or human interference), animals or plants will move in (ecological succession and change over time), my leaves will rot (decomposition),

Do you think anything will change next you observe your quadrat? (see answers above and below)

Can you predict what might change? (see answers above and below)

Can you guess why things change? (see answers above and below)

Follow up discussion

Things change in nature for many reasons. Often weather (rain or wind) move things around through erosion. Sometimes animals move things around. For example, ants are often seen transporting soil and leaves to build their homes and provide food for their colony. These changes are natural and necessary for the processes of Nature to occur. A healthy ecosystem is constantly changing but we rarely see it unless we visit a place very often or conduct an activity like *Digital Decomposition!*

How do humans impact this change? When we develop an area for human use we often disrupt these natural processes. This can disrupt the delicate balance in Nature. For example, sometimes we speed up erosion by removing plants that hold the soil in place. This can pollute nearby streams with a lot of soil and mud, which affects the life in nearby streams. Or sometimes we prevent natural erosion by building walls, concrete surfaces or dams, which prevents necessary nutrients from reaching the places where it is needed. Through wise use and planning we can minimize this impact and keep Nature healthy!

Vocabulary:

Quadrat – a study plot used in scientific study. A quadrat is used to standardize the sampling area. A quadrat is typically 1m X 1m.

Ecological succession – a series of species colonizing an area. Usually when new species move in then species that previously occupied the space move out.

Dynamic – ever changing

Flora – plant life

Fauna – animal life

Habitat – an organism's home

Niche – an organism's job or 'role'

Erosion – the movement of material (soil, rocks, leaves) through the action of weathering (wind and water movement)