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Fall, 2004

Introduction to the lessons:

Students will be at Millcreek Ecosystem and will be learning about the different seeds and plants that live there. They will be taking a field trip to the ecosystem and completing activities using the plants that are indigenous to the area. This will enhance their learning at the ecosystem and allow them to have a hands-on experience.

Core Standards:

Standard III

Students will develop an understanding of their environment.

Objective 1

Investigate plants and plant growth.

Websites for teachers:

<http://info.ag.vt.edu/vce/offices/newsletters/Apr21.pdf>

Gives ideas for students to grow their own plants and instructions how to make the garden

<http://www.kidsgardening.com/>

Website that gives information for teachers and students on plants and gardening

<http://www.sciencenetlinks.com/lessons.cfm?BenchmarkID=5&DocID=343>

Lesson on a variety of plant parts

- ✓ We would also have a map of the ecosystem that they will need to show where they found their seeds and make a compass to show direction

Standard III

Students will develop an understanding of their environment.

Objective 3

Demonstrate how symbols and models are used to represent features of the environment.

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**Title:** Camera Activity

**Abstract:** Students will be able to look closer at the environment that they are in and draw a picture to show it. Students will be using partners to become more familiar with the environment that they will be working in by drawing a small portion of the whole ecosystem.

**Grade Level:** 1<sup>st</sup>

**Utah State Core Curriculum Standards:**

Standard III

Students will develop an understanding of their environment.

Objective 1

Investigate plants and plant growth

**Instructional Time:** 30 min

**Materials:**

- Paper
- Pencil/pen
- Crayons, markers
- KWL

**Terminology:** Ecosystem: An ecological community together with its environment, functioning as a unit

**Intended Learning Outcomes:** 1. Communicate clearly in oral, artistic, written and nonverbal form.  
2. Understand and use basic concepts and skills.

**Background Information:** The history of Millcreek Canyon has been a refuge for city dwellers. This canyon was where they cut down many trees giving it the name of “mill.” The portion of the creek that the students will be visiting is farther down into the city, showing the students that we have these types of ecosystems within our own city, not just in the mountains.

**Invitation to Learn:**

- Teacher will explain the importance of our environment and why we need to preserve it. By doing these activities we will learn about the different plants and why we need them. It is important that they understand what an ecosystem is and what they would lose if we did not have it.
- Explain and define ecosystem, answer any questions the students have.

**Procedures:**

- Teacher will complete a KWL with the students to assess prior knowledge of the ecosystem
  - The KWL will help the teacher to understand what the students know about seeds and the environment they are going to be working in.
  - This will show the teacher what the students know and what will need to be covered before starting the lesson
- Students will be paired up and explain that they are going to a camera activity
- Teacher will explain rules and boundaries that the students need to abide by. Explain that they need to stay within the boundaries they have been given and stay with their partner. There will be parent volunteers to help with any problems that occur. Explain that they are to stay out of the water and away from any dangerous areas.
- Teacher will explain that the students are to take their partner to an interesting part of the ecosystem and they are going to take a picture of it.
- The students will be the camera and the photographer
- Each student will take their partner one at a time and have them close their eyes, then they will take them to the place you want them to take a picture of
- The students will position the “camera” on the place and tap their shoulder to have them open their eyes, and then tap their shoulder again to have them close their eyes. The partner will then lead the other away from the place and have them open their eyes to switch partners. The students cannot look at the place again
- The students will switch and have the other partner do the same activity
- When they have finished they will come back together as a group and draw what they saw
- After the students have worked for awhile or have finished they may go back to the area and see what they missed
- Then the teacher will discuss what they realized about the ecosystem that they didn’t see at first glance

**Assessment:**

- Participation in the activity- staying with their partner, active listening, following the rules and boundaries
- Completion of the picture- colored or drawn a specific area of the ecosystem within the boundaries given, having gone back and made more details if needed.

- Direct Observation-

**Accommodations :**

- Students will be partnered up with another student
- Teacher will assist with walking to the place for picture taking
- Student will be able to use other senses to understand the area if one sense is impaired

Reference for Camera Activity:

Cornwell, J. (1989). Sharing the joy of nature. Nevada City, CA: Dawn Publications.

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**Title:** Sock Seeds

**Abstract:** Students will explore different seeds and plants that are found at Mill Creek. They will have the opportunity to plant their seeds, and observe how their seeds change into plants.

**Grade:** 1<sup>st</sup>

**Utah State Core Curriculum Standard:**

*Standard III:* Students will develop an understanding of their environment.

*Objective 1:* Investigate plants and plant growth

**Instructional Time:** 30 minutes

**Materials:**

- an old sock for every student
- a shoebox for each student
- plastic wrap, or garbage bags
- potting soil
- scissors

**Technology:**

- Microscope: an instrument used to magnify images and objects
- Petri dishes: A shallow circular dish with a loose-fitting cover, used to culture bacteria or other microorganisms.

**Terminology:**

GERMINATION: the growing of seeds

EMBRYO: the life of the plant, what is growing

ENDOSPERM: the food source for the seed which is found around the embryo.

SEED COAT: the tiny embryo's protector. Located on the outside of the seed, it protects the embryo from being damaged or drying out.

RADICLE: an immature root which is the first thing to come out of the seed, proving that it has been germinating.

PLUMULE: containing the stem and leaves, this is what follows the radicle as the seed germinates.

COTYLEDON: (also named the SEED LEAVES) this is formed from the endosperm and takes over the role as the food source for the remainder of the seeds growth.

**Intended Learning Outcomes:**

1. Demonstrate a positive learning attitude
2. Communicate clearly in oral, artistic, written, and nonverbal form
3. Understand and use basic concepts and skills.

**Background Information:**

How do Seeds Germinate (or grow)?

Seeds must have the correct mixture of water, oxygen and temperature. The embryo must have this in order to grow. The endosperm is the embryo's food source while it starts germinating. The seed coat is what protects the embryo from drying out or being damaged.

When the embryo has the correct mixture and is ready to germinate, out come the radicle, which is the first root to appear. After the radicle, comes the plumule which will later turn into the stem and leaves. As the embryo is growing, the endosperm transforms into the cotyledon, which then provides food for the plant as it finished growing.

Once the stems, leaves, and roots are all made, the seed has turned into a plant, and started its life.

**Invitation to Learn:** Now, that you have looked at different plants, Can anyone explain where these plants came from? Create a K-W-L chart with the students. Ask them what they know about seeds? Explain the process of seed germination to students. Read the book How a Seed Grows by Helene Jordan.

**Procedures:**

- At Mill creek, give each student a sock, and have them put it on their foot over their shoe.
- Have students predict how many plants there are at Mill Creek. Ask them how many seeds they think that they will find on their sock?
- Tell students to walk around the creek, and they should try to get as many seeds as they can to stick to their sock
- Now, have students take their sock off, and examine the different seeds stuck to their sock
- Class will return to the classroom
- Teacher will set up microscopes for the students to use and places seeds on the dishes for viewing

- Examine seeds under a microscope
- Students will record their findings in their science journal
- Students can now plant the ir sock in a shoebox
- Ask students how long it will take for their plants to grow? Will all of the seeds on their socks germinate at the same time?
- Line the shoebox with plastic wrap, or a garbage bag
- Fill the box with potting soil
- Cut the sock to flatten the sock out, and place the sock (seeds side up) in the shoebox.
- Cover the sock with a thin layer of soil, and water it
- Have students watch for their seeds to sprout (it should take about a week)
- Students can compare each others plants

**Assessment:** Students explored the seeds on their sock, examined their seeds under microscope, recorded data by drawing pictures or writing in their science journals and they planted their sock to observe how the seeds changed into plants. They also had a chance to compare their plants with their students' plants. Teacher will evaluate the students' science journals, and they will observe the students throughout the activity.

**Accommodations:**

- Students will be partnered with another student
- Students will draw or write in their journals or have another student assist them in this process
- Teacher will assist students with the microscope
- Teacher will assist as needed

**Resources:**

<http://merlin.alfred.edu/muller/physworld03/ProjectOne/seeds.html>

This website has a diagram that describes how seeds germinate. There also some other links that have seed and plant activities do with students.