**Space Science**

*Seasonal Colors*

**Grade Level:** K-2

**Classroom Time:** 45 Minutes

**Materials:**
- Glue
- Fall leaves, branches, etc.
- *Seasonal Colors* worksheet
- *Fall Colors* worksheet

**Objectives:**
1. Given instruction and reading materials, students will understand that natural chemicals are the reason for the change in colors of plants in the fall.
2. Given instruction and materials, students will observe several examples of natural items which have changed color in fall.

**Teacher's introduction to the activity:**
Taking students outside to explore nature and to learn about familiar environmental items is an excellent way to integrate science education into everyday life. Show students an appreciation for the beauty and wonder all around them by pointing out examples and being careful to collect mostly leaves that have already fallen.

**Instruction:**
1. Ask students if they know why many things in nature change color in fall.
2. Read *Fall Colors*.
3. Give each student the *Seasonal Colors* worksheet.
4. Give students an example of one item, and glue it to the worksheet.
5. Ask students to find an item of each color and glue it to the worksheet.
6. The ND Parks Department provides pictures of fall foliage colors at: [http://www.parkrec.nd.gov/fall_colors.html](http://www.parkrec.nd.gov/fall_colors.html)
7. Minnesota provides a fall color finder at: [http://www.dnr.state.mn.us/fall_colors/index.html](http://www.dnr.state.mn.us/fall_colors/index.html)

**Skills:** Botany, Discrimination, Reading comprehension

**Vocabulary:** Anthocyanins, Carotenoids Chlorophyll, Foliage

Get out to see the Fall colors:
Feel the WOW of fall. Minnesota Department of Natural Resources. Retrieved from: [http://www.dnr.state.mn.us/fall_colors/index.html](http://www.dnr.state.mn.us/fall_colors/index.html)
See how many of these colors are seen in your yard or park. Glue an example of each color you find in the appropriate box.
Fall Colors and Seasons

Leaves are green because of a substance called **chlorophyll**. However, there are other substances in plants such as **carotenoids**, which produce yellow, orange and brown colors. **Anthocyanins** are produced in the fall when there is excess sugar in the leaf cells. Anthocyanins produce red, blue and purple colors.

During spring and summer chlorophyll is active which makes the leaves all shades of green. In the fall and winter there are fewer hours of light, and the production of chlorophyll slows down and then stops. The carotenoids and anthocyanins in the leaf start changing the color of the leaves. Temperature & moisture influence the brilliance of color displays. Because carotenoids are always present in the leaves the yellow and gold colors from trees remain fairly constant from year to year.

As the Earth orbits the Sun sometimes one **hemisphere** (Northern half or Southern half) is tilted toward the Sun. At that time the hemisphere facing the Sun receives warm weather. When the hemisphere is tilted away from the Sun, cold weather occurs. We live in the Northern hemisphere where the axis points furthest away from the Sun around December 21. Around March 21 the entire Earth receives about the same amount of light. This is known as the **Equinox**.

Why Do We have Seasons? National Weather Service, NOAA. Retrieved from: [http://www.crh.noaa.gov/lmk/?n=seasons](http://www.crh.noaa.gov/lmk/?n=seasons)