

# **Grades 1 and 3 Lesson: Life Cycle of Wild Rice**

## **Reference:**

Caduto, Michael and Joseph Bruchac. **Keepers of the Earth: Native Stories and Environmental Activities for Children**. Fifth House Ltd.: Calgary. 1988.

\* Chapter 15 **Season** pp.127 - 134

**Topic: Seasonal Changes in Weather**

## **Curriculum Expectations:**

### **Science and Technology**

#### **Grade 1 Earth and Space Systems: Daily and Seasonal Changes**

### **Overall Expectations:**

2. investigate daily and seasonal changes;
3. demonstrate an understanding of what daily and seasonal changes are and of how these changes affect living things.

### **Big Idea:**

- Changes in daily and seasonal cycles affect living things

### **Cross curricular connections**

- Language: Reading, writing, listening , speaking
- Arts - Visual Art, Drama

## **Curriculum Expectations: Grade 3: Life Systems: Growth and Changes in Plants**

### **Overall Expectations:**

3. demonstrate an understanding that plants grow and change and have distinct characteristics.

### **Big Ideas:**

- Plants are the primary source of food for humans.
- Humans need to protect plants and their habitats.
- Plants are important to the planet.

### **Content:**

Seasons occur because Earth's axis is tilted 23.5 degrees to the plane of its orbit as it revolves around the sun. The tilt results in the north pole being closest to the sun on June 21 and farthest away on December 21. At around June 21 the sun's rays more directly reach the Earth's surface causing the

atmosphere to heat north of the equator. Also the day of sunlight is longer than the night. There are more hours of sunlight. On and around December 21 the sun's rays meet the earth's surface at a small angle. This means the sun's energy is spread out over a larger surface area of ground and the atmosphere does not warm to the same extent. Also the night is longer than the day so there are fewer hours of sunlight. On March 21 and September 21 the sun is directly over the equator. Day and night are of equal length.

The Earth's orbit around the Sun is elliptical not circular. The Earth is closest to the sun (perihelion) on January 2 and farthest away from the sun on July 4 (aphelion). The results in the seasons being of unequal length. Summer is 4 days longer than winter in the northern hemisphere. When the Earth is closest to the sun in January, the Earth receives more sunlight which means summer in the southern hemisphere is hotter than in the northern hemisphere.

Seasonal responses in plants and animals in Ontario.

- In spring, plants germinate, bud, flower, grow rapidly.
- In summer, growth is steady.
- In fall, leaves fall, seeds rest or go dormant.
- In winter, seeds are dormant.

#### **Questions for students:**

1. Do all places in the world have 4 seasons?
2. What are the seasons like in your community, at the equator and in the polar regions?
3. What causes the seasons?
4. How do the seasons affect plants, animals and humans?

#### **Creative Activity: Life Cycle of Wild Rice**

1. Draw or create a 3 dimensional model of the stages of growth of wild rice as it goes through each season.
2. Write a story /play about the wild rice life cycle as a class or as individuals.
3. Act out the life cycle of wild rice through the seasons as a group.
4. Create a dance or song about the life cycle of wild rice

#### **Learning Goals:**

- to understand that plants respond to the changes in seasons, to changes in the length of the day and amount of sunlight, to change in moisture levels and to changes in temperature.
- To understand that each year, **annual** plants complete a cycle of life, death, growth (awake) and rest (sleep or dormant).

**Procedure:**

1. Ask students to identify and describe each of the seasons.
2. Ask what changes occur in each season. Discuss temperature, day length , amount of sunlight, and precipitation (rainfall or snow fall).
3. Tell students they are going to act out the life of the wild rice plant which is an annual plant and goes through its whole life cycle from seed to seed in one year. They can also draw, make 3 dimensional models or write a story play to demonstrate their understanding of the life cycle of wild rice.

**Drama (Increase the complexity , number of characters, costumes, scenery as the age of students increases. Characters can also have spirits or act as spiritual beings.)**

**Materials for Costumes: Art supplies, paper, bristol board, textile materials, paint, markers, crayons, tarp, puppet animals, pictures or photos of plants/animals to be created**

- Make green water leaves, green air leaves, purple flower hats that change to beige crumpled flower hats, yellow pollen grains, brown and black withered leaves, shiny dew drops or rain drops, frost, snow flakes, ice cover, blue(tarp) as water body, soil and seed hats, rice worms, geese, red winged blackbirds, muskrat, beaver, deer, moose sun, moon as costumes, puppets and props.
- Bubbles for oxygen and carbon dioxide.
- Adjust thermometer up and down with seasons to show temperature changes.
- Adjust calendar on turtle's back showing the moon cycles.
- Speed and slow the sun and moon characters and change the sun's proximity to the wild rice by season . For the audience you can create, vocabulary cards in the appropriate Indigenous language- Anishinabemowin, Cree, Michif - English and French.

**Narrator's Storyline: End of winter/ Beginning of Spring**

1. You are a seed lying dormant in the mucky soil on the bottom of a lake or stream. ( lay on the floor curled up or crouched in a ball sleeping). One student can act as the Sun circling around and getting closer to the seeds/plants and spending more and less time near them as the seasons cycle. Other students may act as elements of weather such as dew, rain, wind, lightning, thunder (with drums).
2. Winter is coming to an end, the ice and snow above you on the surface of the lake and stream melt. You wake up.
3. You can feel the sunlight reach you. The sunlight is lasting longer each day.(Sun and Moon can cycle according to the season) You can feel the water and soil around you getting warmer. You start to move. (The thermometer can start to rise up from zero.)

4. You germinate and your roots begin to grow down to anchor you into the soil. (Begin to stretch your legs down.)Your roots are taking in nutrients from the soil to help you grow.

5. You sprout green leaves which grow upwards toward the surface of the lake or stream. (Pick up water leaves) .The leaves poke out of the soil and stretch toward the sun, the source of light and the surface of the water. You are photosynthesizing. Blow oxygen bubbles.

6. You grow taller and taller. You move with the movements of the water. Move your body rhythmically side to side as if being gently pushed by the water.

### **Summer**

7. When you reach the surface of the water, your leaves spread out on the top of the water as you are too weak to reach into the air . You lose your water leaves. Let go of your water leaves or ribbons.

8. Your central stalk grows up out of the water and new leave/shoots form. (Pick up your air leaves.)

9. The sun walks slowly close to you so you can feel the long hot days of summer. You can feel the cool morning s and evenings when the sun is not out. You can feel the dew, rain, wind ,lightning, and thunder.

8. You grow flowers. Put on purple flowers hat. The wind moves you and you drop pollen grains on your self and into the water around you.

9. You begin to grow seeds starting from the bottom and adding seeds up the stalk.

### **Fall**

10. The days get shorter so the sun passes more quickly and starts to become father away from you. The temperature is getting cooler.

11. Take off flower hats.

12. Your stalk grows taller and your seeds grow larger.

13. Insects such as rice worms may come to eat your seeds.

14. Geese and red wing blackbirds may come and land on you and/or eat your seeds.

15. Other animals may walk through the water and knock you down and eat your stalk, leaves or carry you away to make a house (e.g. muskrat).

16. Humans may come in canoes with knockers and sweep your seeds into their canoes to harvest you for their food.

17. The wind may bend you and your seeds will drop into the water.

18. As a seed , you dive to the bottom of the water and anchor yourself into the mucky soil.
19. The Sun will jog by as the days are much shorter now.
20. The frost comes and freezes part of your leaves causing them to shrivel up.
21. Leaves turn colour and fall into the water around you.
22. Your leaves wither and die. You gradually crumple and fall down into the water. You fall to the bottom of the lake. You die. You decay or rot turning from green, to brown to black slime.

### **Winter**

23. The snow begins to fall (snowflakes move through the air).

The sun will run by as the days are very short and night is long so the moon

24. Ice begins to form and crack and then thicken above you. As the seed, you curl into the muck with dead leaves around and over you. You become dormant or sleep.

### **The End**

### **Extensions:**

**Adding complexity.** The story can become more complex to reflect the realities of human impact on the wild rice ecosystem and Great Lakes biome.

**Alter the ending of the story with both negative and positive stories of human impact.**

**Negative Human Impact:** Add the impact of pollution from mines, pulp and paper plants, oil and gas plants, pipelines, hydro developments, sewage , garbage and road salt.

Pollution, Dams, Locks and Canal Systems, Genetic modifications from cultivated rice or paddy grown rice, Overharvesting, Cottagers removing rice with machines, Intensified harvesting with air boats, Wars between indigenous people, Settlers, colonization, treaties, racism and genocide resulting in forced relocations to reserves, Government rules /laws against harvesting, Invasive species.

**Positive Human Impact:** Indigenous people are protectors and guardians of the environment, land , water and air.

Assertion of aboriginal rights, land claims, harvesting rights. Reseeding and reintroduction of traditional harvesting activities. Education of the indigenous and settler communities to protect the environment for selves and future generations.

**Practise. Modify. Create. Add characters, song, dance, feasts, harvesting activities by humans and language.**

**Assessment:** Photos, videotape, self-assessment, rubric, portfolio