LESSON #1:
THE FIRE CYCLE

OVERVIEW:

Forest fires are part of a naturally-occurring cycle, and humans can both influence and be influenced by it. This lesson describes the cycle stages and asks students to describe and theorize about the stages of the fire cycle.

BACKGROUND INFORMATION:

The fire cycle is recognized as an important function of healthy forests by scientists, forest managers, and people who depend upon the land. After years of fire suppression, forestry managers began to realize that the biggest fires happened in places where there were large amounts of fuel. Updated forest management practices now use prescribed burns and allow fires to burn, but fire suppression is still a widespread tactic. This lesson will help students understand that fires are an important part of healthy ecosystems.

PEDAGOGY NOTES

This lesson uses storytelling to cover a big concept. There are many opportunities for creating and recreating the story (writing, drawing, acting) for both teachers and students, so feel free to adjust the lesson to the learners’ needs.
CONSIDERATIONS:

Fire can be a traumatic topic for students, so be prepared to take the time to address student concerns and safety. Acknowledging students’ experiences and understandings will be important; some students may have very strong feelings about fire, fire suppression, etc. The lesson begins by asking students what they know about forest fires. When fire is recent, students might have a lot to share. In this case, consider preparing students for the lesson by asking them to draw or write a story about their experiences with forest fire.

MATERIALS NEEDED

- Wildfire cycle cards
- Story script

LEARNING OBJECTIVES

At the end of the lessons, students will be able to:

1. Model the fire cycle using cards, explaining their reasoning for the sequencing of the stages.
2. Identify and describe different stages of the wildfire cycle.
3. Identify and describe changes in the forest habitat from stage to stage in the cycle.

ASSESSMENT

1. Students arrange the cards in a fire cycle and are able to explain why one card precedes or follows another using the story.
2. If students arrange the cards in a fire cycle that differs from the one in the story or illustration, they are able to explain why they chose the sequence they did.
3. Students write a story of the cycle, using the key stages - or - describe the passage between two stages of the cycle, focusing on the changes that occur and the reasons for these changes.

ACTIVITY STEPS

1. Opening discussion
   Ask students what they know about forests. Lead into what they know about forest fires.

2. Cue students for a story
   If they are used to hearing stories, the following introduction may not be necessary.

   "I’m going to tell a story, and I’m going to ask you to use your imaginations. This story begins and ends with a forest."

3. Read the story slowly enough that the students can attach the story to the images. If the students are younger, consider adding motions and having them make sound effects at key places in the story.
(Note: this is for the Boreal forests around Fairbanks, details could be changed to make it appropriate for other ecosystems.)

4. **Read the story script** *(separate page)*

5. **Lead a discussion about cycles**
   - What do you think happens next?
   - Do you think this story ends here?

   *Explain that forest fires are a part of the cycles that forests go through. Include the ideas of repetition and variation in cycles.*

6. **Have the students recreate the story using the cards.**
   Consider reading the story again as the students arrange the cards. The cards should form a circle, where the two forests meet. One way to do this is to hand the cards out to the students and ask them to physically arrange themselves in the sequence of the fire cycle, displaying their cards to the whole group. Students representing different stages should explain their relationship to the stages preceding and following theirs.

7. **Concluding discussion:**
   - Humans sometimes start forest fires and sometimes put out forest fires. How does this affect the fire cycle?
   - What other things do humans do that can affect the fire cycle (i.e. hunt, cut trees, plant gardens, clear land)?

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**EXTENSION**

Additional science standards are addressed by including activities and discussions that explore plant and animal adaptations for survival in a changing environment.

- Draw a plant that is able to survive a forest fire. What does it need to survive? *(3-LS3-2; 3-LS4-4; 4-LS1-1)*
- Draw a picture showing how the habitat after a forest fire is different than the habitat in a forest before the fire? Draw animals do you think would thrive in the habitat before a fire and show what they have that allows them to survive. Do the same for the habitat after. *(3-LS3-2; 3-LS4-3)*
- Do you think that a forest fire might be a good way to create new habitat for certain animals? Why or why not? *(3-LS4-4)*
The Fire Cycle

Dense forest

Mature forest

Lightning

Wildfire

Young forest

New growth

Burnt forest
DENSE FOREST

LIGHTNING
WILDFIRE

BURNT FOREST
MATURE FOREST
THE FIRE CYCLE STORY
SCRIPT

You will need the seven photographs that accompany this story. There are prompts in the story for when to show them.

I’m going to tell you a story, one that begins and ends with a forest. Show picture of an Alaskan boreal forest.

Imagine a forest, one like you see here. Maybe you’ve seen one like it. The trees are tall and they grow together to make a shady canopy. In the winter the snow sticks to their branches, especially the spruce trees. And then spring comes, and the sun is shining longer during the day. A lot of the trees put out their green leaves, and the snow melts, exposing the dead logs on the forest floor. New bushes and grasses push up. Imagine all the plants stretching up to the sun. It’s summer now, and it’s getting hotter out...and now the snow is gone, and it’s dry enough to walk around under the trees.

Then one day the wind comes up, and a storm rolls across the sky. There are lots of clouds. There’s thunder, and there’s lightning jumping from cloud to cloud. Show picture of lightning.

Some of this lightning goes down to the forest and hits trees, and some of those trees catch on fire. And the trees next to them catch on fire. And the trees next to those trees catch on fire. And soon a big part of the forest is on fire. Show picture of a forest fire.

After a while the forest is burnt away. Maybe the rain falls and stops the fire. Maybe there are no more trees left to burn. Ashes and burnt logs lie all around. Show picture of a burnt forest.

The days pass and the seasons continue. Soon, tender green shoots are poking up through the ground, and before long there are young plants growing. Some of these plants are young trees just like the ones that burned, and some are new plants that weren’t there before. Show a picture of new growth.

All these plants grow and become bigger, creating a young forest. Animals come to eat the tender leaves, flowers, and berries that they can reach. Show picture of a young forest.

As the forest gets older, the plants change, and it shifts more towards trees. As these trees grow, they drop dead limbs and the forest gets denser, crowding out the light for the smaller plants. Show a picture of a darker, denser forest.

What do you think happens next?