“Solutions-Oriented Learning” Storyline

K-Fire: Humans and Wildfires

Storyline introduction and overview:

Wildfires are occurring at an increasing rate in Washington state. Students often have questions regarding forest habitats, safety and the prevention of wildfires. In this storyline students will learn about native ways of knowing through oral storytelling, trees as part of habitats local to them, and wildfire prevention. Students will participate in integrated science and literacy lessons to build their understanding of how wildfires are connected to weather and to communicate solutions to prevent human initiated wildfires.

NGSS Learning Progression for this Storyline: The kindergarten storyline is part of a larger learning progression that includes students mastering standards pre-K to 12th grade. Take a look at how the kindergarten performance expectations fit in a continuum of learning for your students.

Placemaking:	**Anchoring phenomena:**	**Drawdown:**
School Yard	Wildfires affect trees.	Forest Protection

Indigenous and other relevant cultural connections:

“Native spiritual values live in stories passed verbally from generation to generation. The stories preserve Native culture, languages and ways of explaining the universe.”

Emil Her Many Horses
National Museum of the American Indian

Since Time Immemorial

NGSS PEs:

K-ESS3-3 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

K-ESS3-2 Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

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Estimated time required to implement this storyline: 3 to 4 weeks

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Science & Engineering Practice (SEP)	Disciplinary Core Idea (DCI)	Cross Cutting Concept (CCC)
Obtaining, Evaluating and Communicating Information Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. **Asking Questions and Defining Problems** Asking questions and defining problems in grades K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested. • Ask questions based on observations to find more information about the designed world. **Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information. • Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.	**ESS3.C Human Impacts on Earth Living Systems** Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. **ESS3.B: Natural Hazards** Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.	**Cause and Effect** Events have causes that generate observable patterns. ***Connections to Engineering,Technology, and Applications of Science*** **Interdependence of Science, Engineering, and Technology** • People encounter questions about the natural world every day. **Influence of Engineering, Technology, and Science on Society and the Natural World** • People depend on various technologies in their lives; human life would be very different without technology.

Learning Sessions

	Prerequisite knowledge for students before this	

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	storyline:	
	Students should have experience and knowledge of: ● K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time. ● K-ESS3-1 Use a model to represent the relationship between the needs of different plants or animals(including humans) and the places they live.	

	Materials List	
	Before the lessons the teacher should print and review the 10 pages of Teacher Guide: Smokey Bear and Friends	

Learning session	Materials
1.	Regional story of your choice
2.	Douglas Fir cones for students to hold, pre assessment, assessment rubric pages
3.	The Forest Fire picture
4.	The PLT Adopt A Tree activity guide, copies of the student page, copies of the Field STEM Notebook Observation Organizer, and chart paper
5.	Pictures of grassland, forest, and plains, index cards
6.	Recording paper
7.	Smokey Bear mini book page 5 and the forest fire picture
8.	Pictures of Fire Danger Rating, dry wood samples for the students to feel, soggy wood samples for the students to feel.
9.	Smokey Puppet activity page
10.	Choice of off ramps or extensions
11.	Post assessment, post assessment part two, assessment rubric.

1.	**Grounding in Native Ways of Knowing**	Estimated time: minutes
	Connect students throughout this storyline to Native Ways of Knowing through oral storytelling	

	with the stories: Douglas Fir Cone story Grandmother Cedar Tree (page 23 of the document) How Fire Came to Earth (A link to the storyteller. To find the story scroll down to the bottom of the page and use Adobe Flash Player) (video is 8 minutes long)

2.	**Examine phenomena: Wildfires affect trees and forest habitats.**	Estimated time: 30 minutes
	Take students for a walk outside to look at trees/forest/school yard. When you are with your class outside, stop and wonder: " What would happen if there was a fire? How could we prevent fires?" Go inside and complete the pre-assessment. You have two options for completing the pre-assessment with your students, do what works best for your class: • Option 1: Do this as a whole class using a classroom chart. Field student responses and write their thoughts down on the chart. • Option 2: Have students complete this pre-assessment independently using the pre-assessment page above. Rubric- use only section 1 for the pre-assessment *Collect Douglas Fir cones and have them ready for students to hold during the story. If you do not have access to Doug Fir cones, please see the facts and image page below.* Read Douglas Fir Cone story outside (see link in Grounding Native Ways of Knowing section) • For additional information about Douglas Fir cones, images and background vocabulary reference Douglas Fir Cone facts with images	

3.	**Guiding question: What happened to the trees in this picture?**	Estimated time: 25 minutes
	Show the picture: *Forest fire picture* Discussion: Ask students- What do you think happened to the trees in this picture? What do you notice? What more do you want to know? Students may notice: • Char on the trunks • Green grass on the ground • Green leaves in the background	

	• Standing brown dead trees • Cave like a mice might want to go--connect to the oral story and animal homes Read from Smokey Bear & Friends Teacher's Guide Wildfires FYI page. Song introduction from Smokey Bear & Friends Teacher's Guide *Teach Smokey's jingle to the tune of "Row, Row, Row Your Boat."* *Only you can prevent wildfires.* *Be careful what you do.* *Protect the forest and animals.* *Smokey counts on you!*

4.	**Guiding question: What do I know about a tree in my school yard?**	Estimated time: 45 minutes (Additional follow up time for "Adopt a Tree" throughout the year)

	Students "adopt" a tree, deepening their awareness of individual trees and encouraging a greater understanding and appreciation of their local environment.
	Follow directions in the PLT Adopt a Tree guide below. This investigation can be done as a whole group with one tree or each student can "adopt" their own tree to investigate.
	For additional related activities see the PLT Adopt a Tree Student page and Adopt a Tree FieldSTEM Notebook Observation Organizer below.
	• PLT Adopt a Tree activity guide
	  ○ PLT Adopt a Tree Student page
	  ○ Adopt a Tree FieldSTEM Notebook Observation Organizer
	  ○ Optional art connection: Rub the bark of the tree to observe the texture of the bark.
	• After you complete the student page and observation organizer, return to the classroom and ask the students one of the following questions (teacher's choice) and record student questions on chart paper: (Being able to ask questions is a kindergarten standard.)
	  ○ "If your tree could talk, what would it want to know about its environment?"
	  ○ "What would you like to ask your tree?"	

5.	**Guiding question: What are "homes" for animals?**	Estimated time: 20 minutes

	Discussion: Where is your home? What does home mean to you? What are homes for animals? Use the Homes Galore! (page 4 from teacher's guide) to explain that animals live in a variety of habitats. Homes Galore page 4

6.	**Guiding question: Which animals make their home in our tree?**	Estimated time: 20 minutes
	Go to the tree you adopted and do a five minute sit spot. Have students listen, draw and think quietly during this time. Find more about Sit Spots on page 4 of Field Outdoor Observation Protocol Discussion: Which animals make their home in our tree?	

7.	**Guiding question:** **Do you know what it means to prevent something?**	Estimated time: 30 minutes
	Overview: Students learn about how to prevent human-caused wildfires and protect habitats. Create and read the mini book and follow up with the short video. ● Smokey Bear & Friends Teacher's Guide ○ Smokey mini book ○ Video "A Day In the Forest With Smokey Bear" Show the picture: *Forest fire picture* Discussion: Ask students- What do you think happened to the trees in this picture? What do you notice? What more do you want to know about this picture?	

8.	**Guiding question: When do wildfires occur?**	Estimated time: 30 minutes
	National Fire Danger Rating System Fire Danger Levels with Smokey Bear Ask students "Have you ever seen something like this? Where did you see it? What is it for? " Lead discussion about how weather plays a part in the occurrence and severity of wildfires. Bring in samples of wood, both wet and dry. Let them feel both samples and draw conclusions	

	about which would burn easier. Help them make a connection between weather and when you would find each type outside. Ask students, "Why is it important to pay attention to the weather forecast and the fire danger rating?" After students learn about fire ratings and Smokey Bear, have students explore possible careers that work in forestry or in fire sciences. These are some suggestions: • PEI Career Card: Assistant Forester • Careers in Forestry • Natural Inquirer: Fire Scientist Careers To extend the career connections in this storyline, reach out to your local Department of Natural Resources office or fire station to invite a person with a career related to fire into your classroom to share about their job with your class.

9.	**Guiding question: How do you prevent a wildfire?**	Estimated time: 30 minutes
	Ask students "What kind of animals make their home in the forest or in trees?" After the students respond, create the Smokey Puppet Activity (page 6 in teacher's guide). Students should use the puppets to act out a variety of skits: • Smokey sees some campers about to start a campfire. • Smokey finds children playing with matches or lighters. • Smokey meets a family putting out a campfire incorrectly. • Smokey sees a family not watching an open campfire. Discussion: How can we prevent forest fires? This lesson could be incorporated into a purposeful play time after all students learn how to work with the puppets.	

10.	**Possible next steps/off-ramps/actions:**	Estimated time: Two 30 minute sessions
	1. Play How Fire Came to Be 2. What types of trees have bark that protect them from fire? Circle back to Douglas Fir Cone Story 3. Connect with your local DNR site and see if a firefighter or Smokey Bear could visit your classroom 4. Thank a DNR employee-letter	

	5. Grandmother Cedar Tree A Samish Story as told by Roger Fernandes, Lower Elwha S'Klallam Storyteller: Grandmother Cedar Tree 6. Contact local WSU agency resources or research for current events 7. Oxygen Fire craft **8.** The Fire Triangle Student Worksheet - do as a whole group on a large piece of paper

11.	**Post Assessment:**	
	K-Fire: Humans And Wildfire Post Assessment Part One Create a chart on chart paper with the title "How can humans prevent fires that harm trees?" and record student responses. Rewrite responses below for record keeping purposes. Frame for students: "I think humans can prevent wildfires by _____ because _____. K-Fire: Humans and Wildfire Post Assessment Part Two Directions: After the formative post-assessment discussion, highlight the student responses (see rubric) that are the best possible solutions to preventing wildfires. Students will create a poster (see example in rubric) with a peer or small group to communicate their understanding of the impact of wildfires and what humans can do to prevent wildfires. Posters should include a sentence (student written or teacher scribed) and a scientific drawing with labels (can be student written or pre-made). Posters can be posted in community areas such as the school hallway, local community centers, school district offices, or local libraries. K-Fire: Humans and Wildfire Assessment Rubric	

OER Tracker - K-Fire: Humans and Wildfire

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