

Idaho Ablaze-Trinity, Elk, Pony Fires Activity

Name: IRRC	Time required: 60-90 minutes
Subject: Science	Grade Level: 4-7 can be adapted up or down for different grade levels

Overview	Students will learn about wildfires and understand the fire triangle.
Goal(s) & Objective(s)	Students will be introduced to the fire triangle, the benefits and problems associated with fire, fire ecology in both forest and sagebrush-steppe ecosystems, the difference between natural and human-caused fire, fire-dependent ecosystems, fire's role in nature, noxious weed invasion and the fire environment of the Southern Idaho.
Materials	<ul style="list-style-type: none"> • Idaho Ablaze- 2013 Trinity, Elk, Pony Fire Powerpoint • Fire Triangle Model (Create before activity) • gumdrops and toothpicks (4th grade +) • Life on the range video: <i>Huge Fires Impact Ranchers</i> http://www.lifeontherange.org/range-stories/wildfire.htm • Optional activity: Candle, Mason Jar & Matches (match stick fire supplies) • Optional (Background) Fire Fact Sheet: This further explains fire
Teaching Activities: Instructional Approaches & Strategies	<p>Introduction</p> <ol style="list-style-type: none"> 1. Ask students what they know about wildfires. Give them 2-3 min. to brainstorm ideas, and then write their ideas on the white board. • What causes them? (Natural: lightning, unnatural: human-caused fires, including fires caused by vehicles, campfires, power lines, etc.) • What is the difference between good fire and bad fire? <p>Examples: good fire = fire in a fireplace, campfire, candle flame, cooking stove, etc. Bad fire = human-caused wildfires, including house fires, etc.</p> <p>Procedures</p> <ol style="list-style-type: none"> 1. Idaho Ablaze- 2013 Trinity, Elk, Pony Fire PowerPoint (10-15min.) 2. Fire Triangle demonstration with gum drops. (20 min.) 3. Optional: mason Jar Candle Exercise (5 min.) 4. Life on the range video: <i>Huge Fires Impact Ranchers</i> http://www.lifeontherange.org/range-stories/wildfire.htm <p>Closure</p> <ul style="list-style-type: none"> • Discuss rehabilitation efforts. • Optional Fire Fact Sheet (read through with a partner and do a graffiti board on one thing that they learned from the fact sheet). *Graffiti boards: student can write their 1-2 word description on the board using graffiti writing. NO repeats of words are allowed. <ul style="list-style-type: none"> ➤ Go through words and discuss, if some are unclear, have student explain their description further.

Assessment:	<p>Formative Assessment: after movie discussion.</p> <p>Consider: Do students have an understanding of elements of fire? Do students have an understanding on how grazing helps reduce fires?</p>
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Detailed Instruction:

Fire Triangle Demonstration for younger age groups or older too (15-20 minutes).

- Show fire ppt: Beginning of slide show triangle slide. Stop.
 - Ask the students for examples of each element. Ask them, if one of the elements is removed then does the fire go out? Discuss how each element is needed to make fire and keep it burning.
- Discuss the following information and complete the optional candle exercise.

Oxygen: The air we breathe. Humans need oxygen to live because we have lungs and lungs need oxygen in order to function and keep us alive. Without oxygen, fire cannot breathe and it dies. (You could do the candle exercise here).

Candle Exercise: Need mason jar (or similar) with lid and a small candle. Light a small candle (votive or similar size) and set it on the jar’s lid. Show the students the candle and ask:

“What do we need to breathe?” (Students answer “oxygen!”)

Place the jar over the candle and screw it onto the lid (no need to screw it on completely)

The students will observe the candle extinguishing because of lack of oxygen.

Explain to the students that the jar sealed off the oxygen, so the candle could not keep burning. This is why oxygen is part of the fire triangle. (The candle could also be placed in a saucer of water, and then capped with the mason jar to show how the Oxygen is “used up” by the candle – the water will rise into the jar).

Fuel: Fire needs fuel like humans need food. If we don’t eat, what happens? We starve! Fire needs fuel, which is anything that will burn. Grass burns, trees burn, paper burns, etc. Your clothes will even burn! What won’t burn? Rocks, dirt, cement, etc.

Heat: Fire needs heat in order to burn too. Fire won’t burn in the snow or in water, because it cannot maintain enough heat to keep burning. Humans need heat too; otherwise, our life processes stop. Fire needs heat too, without it, fire dies. For example, when you pour water on fire, what happens? It goes out because you have removed the heat!

- Have students wash their hands and remove excess materials from their desks. Distribute three to four toothpicks and three to four gum drops to each student, ask them not to eat the gumdrops because they will be using them for an assignment. You can inform them that they will be able to eat the gumdrops after the assignment is completed.
- **Finish PowerPoint until you reach the Fire Triangle Activity Slide**

The Fire Triangle Activity

- Explain that fire needs all three elements in order to burn. When we connect each element, it makes a triangle, which we call, “The Fire Triangle.” Each gumdrop represents an element of the fire triangle: white/yellow gumdrop for oxygen, green/purple for fuel, red/orange for heat. When we connect these elements with our toothpicks, they make a fire triangle.

- Demonstrate to the class what happens when we remove one element (gumdrop)? The fire triangle is broken and fire cannot burn. For example: if we pour water on fire, it goes out Which element of the triangle have we taken away? (Remove a red or orange gumdrop) HEAT. (Replace gumdrop)
- Have students connect their fire triangles together. Building upwards. (they will need more toothpicks for this. This model resembles how a fire grows. Their model should be able to sit on the desk by itself.
- Once they have their fire model created. Ask them what they can take away and control since their model is bigger, they can't just throw a bucket of water on the fire
 - Can we control air? Sort of, to some extent we can smother a small fire. Planes drop fire retardant. But when it's big and if there are winds it is sometimes impossible too.
 - Can we control heat? Sort of, we can add water to reduce the heat. This also depends on the climate and weather elements. It's hard to control the heat of the sun that enhances the fires heat.
 - Can we control fuel? Yes, we can remove fuel, (fire breaks) to stop the fire from spreading further. We can graze areas which reduce fuel, so that the fire doesn't spread.
- Have the students pull all the fuel from their fire model (all green and purple gumdrops). What is happening to the fire model? Why is it collapsing?
- Fire needs fuel in order to burn, so if we have a fire ring, but there is only dirt in it and we try to light it on fire with a match, what happens? Nothing! There is no fuel, so the fire can't burn.
- Watch life on the range video: *Huge Fires Impact Ranchers*: <http://www.lifeontherange.org/range-stories/wildfire.htm>

Closure:

- **Finish PowerPoint- Discuss rehabilitation of land and prevention techniques**
- (Formative Assessment) Class discussion:
 - What did the fire impact?
 - What made this fire so hard to stop?
 - What is the result of the fire for ranchers? Animals (domestic & wild), people living in the area?
 - What can we do to help reduce fire?

This last question will lead into grazing activity. See *Ice Cream Plants-Skull Observation Lesson Plan* at www.idrange.org

Prevention

As with any project involving the use of fire, it is important to talk to students about respecting fire as a tool and not as a toy. Before implementing this lesson, have a short discussion with the students.

Optional Extension:

Fire demo: collect cheat grass and dry weeds and collect fresh green grass. Place cheat grass in a pie tin and green grass in another pie tin. Set the cheat grass on fire. (You may have to do this a couple times for students to see, the dry cheat grass burns really quick). Now set the green grass on fire (if you can) discuss the differences between the two types of vegetation. Explain that this is why Southern Idaho has so many fires. There's a lot of vegetation that hasn't been grazed so it dries up and is very flammable.