

Combustion Demonstration:

The Imagination Station's Combustion Demonstration features a lot flames and explosions, but there is some strong science content behind the fun!

Demonstration highlights include:

Fire safety

Students will learn the basics of fire safety. How do you use a fire extinguisher? How many times a year should the batteries in your smoke detector be changed?

Remember: Smoke kills more people a year than fire, so it is important for all families to have a clear evacuation plan.

Three things are need for combustion

In order for combustion to occur, some type of fuel, an ignition source and oxygen are all needed.

Vapor Ramp

Learn how dangerous unseen vapors can be. Gasoline and paint thinner emit these combustible gases into the air. It is easy to see the importance of good ventilation in this demonstration.

Hydrogen/Oxygen Bubbles

When an ignition source is added to bubbles, it releases a tremendous amount of energy. Learn how this may be one component of green energy use in the future.

Content Standards Alignment

Ohio Content Standards Alignment:

Grades 3-5

Physical Science: C

Scientific Inquiry: B

Scientific Ways of Knowing: D

Grades 6-8

Physical Science: B

Scientific Inquiry: B

Scientific Ways of Knowing: C

Grades 9-10

Physical Sciences: C,F,H

Science and Technology: B

Scientific Ways of Knowing: D

Michigan Curriculum Framework Alignment:

Science

Strand 1. Constructing New Scientific Knowledge

Standard 1.1 Constructing New Scientific Knowledge

Strand IV. Using Scientific Knowledge in Physical Science

Standard IV.I. Matter and Energy

Post Activity:

Fighting Fires

Materials:

Several long matches

Procedure:

1. Divide students into cooperative learning groups.
2. Show students the long match. Ask students to watch carefully. Light the match and hold it level. Have students observe the speed at which fire travels and record their observations.
3. Blow the match out and light another. Keep the match head pointing up. Have students observe the speed at which the fire travels and record their observations.
4. Blow the match out and light another. Hold the match on an angle with the match head pointing down. Have students observe the speed at which the fire travels and record their observations.
5. Have each group discuss their observations and brainstorm ideas about why the fire behaved the way it did.
6. Have students share their reflections with the entire class and write their ideas on the board. Let the students know that what they observe is the same thing that forest firefighters must study to help them extinguish wild fires.
7. Have each group take the role of a forest firefighter and write a short story about how this information helps fight wildfires in the Western United States. Use the PBS American Field Guide online resources at www.pbs.org/americanfieldguide/teachers/fires/fires_sum.html and National Geographic's site www.nationalgeographic.com/firecall/ for additional resources and information.

What's the Science?

If the match is level, the fire moves along steadily. If the match head is up, the fire moves downward more slowly because the heat is flowing away from rather than toward the wood fuel source. With the match head down, the fire moves quickly upward as the fuel source is directly heated and engulfed by the flame.