

# Old Flaskful



**Overview:** Students are introduced to a model geysir and allowed to investigate the processes necessary for a geysir eruption.

**Essential Questions:** What conditions must exist for a geysir to erupt? What changes occur in a geysir before, during and after an eruption? Is it possible to predict a geysir eruption?

**National Science Standards:**

Content Standard A: Science as Inquiry Abilities necessary to do science inquiry.

Content Standard B: □ Students should develop an understanding of properties and changes of properties in matter.

Content Standard D: Students should develop an understanding of the structure of the earth's system

**Materials:** 500 ml flask, stopper with hole to accept a 1-1.5 cm diameter glass tube, a 1.5- 2 meter tube, funnel glued to the top of the tube, ring stand, ring clamps, heat source such as a propane torch

**Vocabulary:** geysir, boiling, pressure, super-heated water, interval, duration, plumbing system

**Safety Reminders:** boiling water, open flame. Wear protective equipment and keep students away from the apparatus

**Procedure:**

**Engage:** Show a video clip of a geysir eruption. You can also view a webcam shot of Old Faithful Geysir at <http://www.nps.gov/archive/yell/oldfaithfulcam.htm>

**Explore:** Begin to heat the geyser. Have students observe the process, writing any changes they see, taking particular note of steam bubbles...the size, frequency, etc. Also direct their attention to the water level in the funnel at the top of the opening. Observe through a complete eruption.

**Explain:** Lead a discussion of the observations the students made before, during and after the eruption. The discussion should include the following:

- the geyser's plumbing system
- the increased pressure due to the mass and volume of water in the tube
- the concept of superheated water
- the concept of the flashpoint of a geyser
- the duration: the time a geyser erupts
- the interval: the time between eruptions

Use websites such as these to familiarize yourself with the concepts before introducing them to students.

[http://www.nps.gov/yell/tours/oldfaithful/bee\\_hive\\_work.htm](http://www.nps.gov/yell/tours/oldfaithful/bee_hive_work.htm)

[http://www.nps.gov/yell/tours/fountainpaint/geyser\\_works.htm](http://www.nps.gov/yell/tours/fountainpaint/geyser_works.htm)

[http://www.yellowstonetreasures.com/geyser\\_facts.htm](http://www.yellowstonetreasures.com/geyser_facts.htm)

**Extend:** Encourage students to continue using their observations skills by watching another geyser eruption and asking questions and finding answers to those questions.

**Evaluate:** Assess students' ability and accuracy in recording observations, sharing results, and/or writing a conclusion.

John Graves, 2007