

Student's Learning Activities (Rumford and calorics)

Activity 1

You will watch a video with narration or listen to a story from your teacher about Benjamir Thompson (Rumford) and his experiment on cannons. Please write the important points of the story that you will listen to, and discuss them in your group. (Indicative important points: the way in which the cannons were manufactured in the late 18th century. The experiment carried out by the workers in the cannon factory, under the supervision of Benjamin Thompson. His observations and remarks on the experiment. His reflections on the nature of heat. The new model of heat and the death of the caloric theory)
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Activity 2 Based on the narrated story, describe the experiment that was carried out by Rumford and the workers in the cannons' factory. (You may use the following websites: http://www.daviddarling.info/encyclopedia/R/Rumford.html http://www.eoht.info/page/Cannon+boring+experiment)

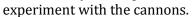




Activity 3

Experimental procedure:

You have at your disposal an experimental device that simulates the layout used by Rumford at his







Sequential phases of the metal rod's movement into the metal tube. Please hold firmly with one hand the metal tube. With the other hand move the metal rod back and forth into the metal tube, for one minute.

* Repeat the same procedure for two minutes.

Write down your observations and try to explain the increase of the temperature in the device.



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	Activity 4 According to the story and the text of the following website, write a text that describes Benjamir
	Thomson's announcements about the nature of heat, at the journals of his day.
	http://www.jstor.org/discover/10.2307/3143157?uid=3738128&uid=2&uid=4&sid=21103274
	<u>082171</u>
	Activity 5 Based on the story of the video and your internet research write a text outlining the evolution of scientific views on the nature of the heat from the time of Aristotle to today, with a time sequence.
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Activity 6
How do you explain the scientific community's delay to accept the kinetic theory of heat?

Activity 7

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Using the list of ideas that describe the characteristics of science and the ways it develops, try to locate and write these ideas in the story you heard and the activities of this lesson. These ideas that scientists call Nature of Science (Nature Of Science-NOS-) are:
Characteristics of Nature of Science (NOS)

- **1.** Science demands and relies on empirical evidence.
- **2.** Knowledge production in science includes many common features and shared habits of mind.
- **3.** Scientific knowledge is tentative but durable.
- **4.** Laws and theories are related but distinct kinds of scientific knowledge.
- **5.** Science is a highly creative endeavor.
- **6.** Science has a subjective element.
- 7. There are historical, cultural, and social influences on science.
- **8.** Science and technology impact each other, but they are not the same.
- **9.** Science and its methods cannot answer all questions.





Scientists argue that in order to learn science one must first understand what exactly science in Because it is difficult to define science, scientists give a list of its characteristics.

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