

Student's learning activities (Rumford and nutrition)

Activity 1

You will watch a video with narration or listen to a story from your teacher about Benjamin Thompson (Rumford) and his work in the Trophology. Please write the most important points of the story according to your view and discuss them in your group (Indicative points of the narration: the aims of the program of the nutrition which Thompson designed for the soldiers and the workers of Bavaria, the ingredients of the original Rumford's soup, the ingredient was added in its later version of Thompson's soup, the calories which the original Rumford's soup contained,..)

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Activity 2

Based on the narration, write a text in which the policy of Thompson is described about the nutrition that he designed for the soldiers and the workers of Bavaria.

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Activity 3

Please research in the internet and make up a table with four kinds of foods in each category: the proteins, the carbohydrates, the vitamins and the fats.

Proteins	Carbohydrates	Vitamins	Fats

Activity 4

Activity for the laboratory: Please count the calories contained in a peanut.

(You can find it in many webpages e.g:

http://www.wyaae.org/Portals/19/Calories_in_a_Peanut.pdf)

Please prepare in your group the worksheet given to you by your teacher for this purpose.

Activity 5

According to the narration, it is energy that is received in our body through food. A part of this energy is transformed to work that is produced through human labour. What becomes the rest of this energy? In order to answer the question please study the article that you will find in the webpage: <http://www.eufic.org/page/en/page/what-is-energy/> .

Your group's answer could be given through: a) a text or b) a poster. Compare the answer of your group with those of the other groups.

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Activity 6

In the school textbooks of biology, the energy contained in food is measured in Cals. In Physics it is measured in Joules and on food label it is written as Kcal. Search the internet for relevant information using the key words: calorie, food label, joule, nutrition. Please develop a small dictionary about the above mentioned scientific terms and explain the relation between joule and

cal. Indicative link at: <http://www.livestrong.com/article/49686-labels-use-calories-instead-joules/> informative but of a very high level.

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Activity 7

Using the following list of ideas that describe the characteristics of science as well as the ways it develops, which scientists call “Nature of Science” (NOS) try to locate some of them in the story you heard and the above activities of this lesson. McComas (2004).

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 is. Because it is difficult to define science, scientists give a list of its characteristics.

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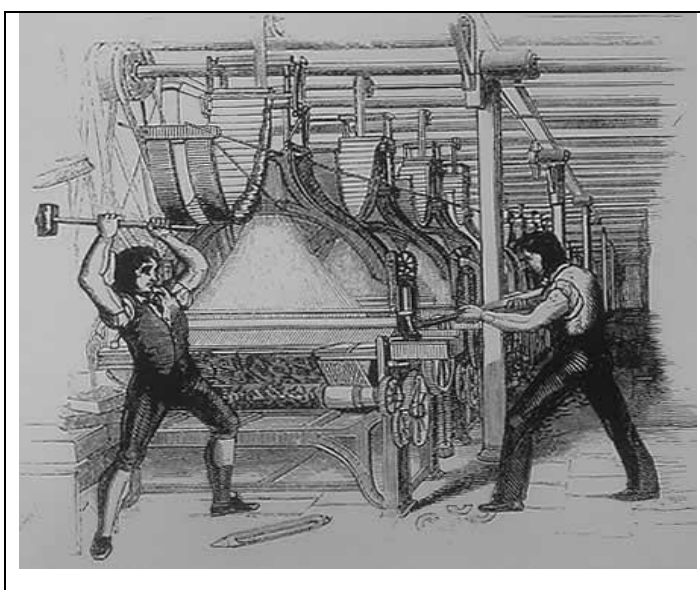
Activity 8 project)

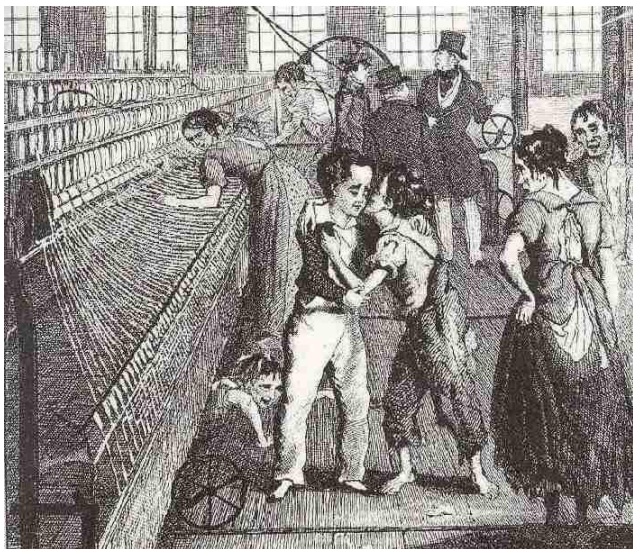
The use of the work that the human body produces may replace electric or other forms of energy and thus contribute to the containment of global warming and to the achievement of sustainable development. Please watch the video <https://www.youtube.com/watch?v=qzqJS EJV94> Try to find similar videos and design a project about the prospects and the benefits of human powered technology.

Activity 9 (project)

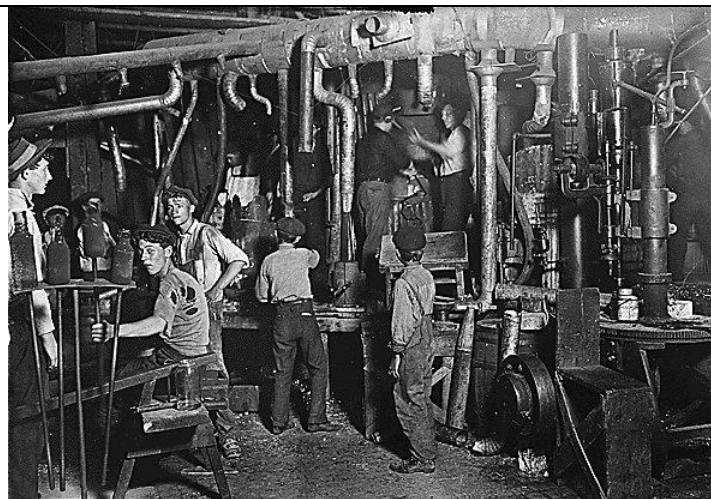
Using key words such as human powered machines industrial revolution age please try to find visual material and sociological data about employment during the historical period when Benjamin Thompson lived and worked. Design a project in order to present this era to an activity that will be organized in your school.

Samples that can be found through this search are presented bellow:

	<p>http://historyplanet.files.wordpress.com/2010/03/luddite.jpg</p>
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<http://histclo.com/imagef/date/2008/01/ir01s.jpg>



<http://upload.wikimedia.org/wikipedia/commons/4/46/TravailEnfantUSXIX.jpg>

Student's Learning Activities (Rumford and nutrition) were written by Ioannis Vlachos and Aikaterini Rizaki with the support by the European Commission (Project 518094-LLP-1-2011-1-GR-COMENIUS-CMP) and the NKUA of Greece. This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained there in.