PARSEL teaching –learning materials compiled by the consortium
as part of an EC FP6 funded project (SAS6-CT-2006-042922-PARSEL).

A big problem for Magalhães (Magellan): Food preservation (Teachers)

Subject

With this task students have the opportunity to study food preservation methods.

Objectives

The main goal of this task is to learn more about food preservation. For that, students will engage with reading texts and developing an investigation about the effect of different food preserving methods. They will have to share and confront their findings with the whole class.

Competences

Development of substantive knowledge – whenever the student has to analyse daily problematic situations related to sea travelling and food preservation

Development of processual knowledge – whenever the student formulates hypotheses, observes and collects data, constructs tables and graphics or develops an investigation plan

Development of reasoning competences – whenever the student undergoes argumentation and decision making

Development of communicational competencies – whenever the student has to argument and to defend his/ her ideas and whenever he/ she has to hear to and to question his/ her peers ideas

Construction of attitudes - collaboration, respect, sharing and negotiation of different points of view, responsibility

Developers: Freire, A. (coord.), Baptista, M.; Cruz, N.; Nunes, T., & Vilela, C. (2007). Magalhães and Circumnavigate Voyage. In Universidade de Lisboa (Ed.)., *Professores Europeus de Ciências (PEC): Conhecimento científico, Competências linguísticas e Meios Digitais.* Lisboa: Professores Europeus de Ciências (PEC) – Sócrates Project 226641-CP-1-2005-ES-COMENIUS-C21, 2005-2008.
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Task description

It is suggested that students start the activity by reading individually two texts to contextualize the activity.

After that, students are suggested to work in groups with the goal of investigating the effect of different food preserving methods. They will have to share and confront their findings with the whole class.

Finally, each group writes a text with the information and knowledge it gained about methods of preserving food. The text should compare nowadays situation with the one lived by the Portuguese on the sea travelling era on the 16th century. Then, each group communicates to class their findings.

Procedure

Next we give a tip for a possible development of the task.

1. Students must read carefully the following texts to contextualize the activity:

> "In 1519 Magellan and his fleet set sail from Seville, Spain, to find a water route to the Spice Islands in Indonesia, where the most sought-after commodities — cloves, pepper, and nutmeg — flourished. Most important, they were looking for a passageway, a strait, through the great landmass of the Americas that would lead them to these fabled islands….. With a fleet of five ships and more than two hundred men, they had set out in search of the Spice Islands. Three years later they returned with an abundance of spices from their intended destination, but with just one ship carrying eighteen emaciated men. They suffered starvation, disease, and torture, and many died, including Magellan, who was violently killed in a fierce battle" (Bergreen, 2004).

> "Storing and preserving food have became one of the biggest challenges, since men started to travel by sea. During 16th Century, all ships would have the same food: "sailing cookie" – a salty, compact cookie, usually "spoilt due to cockroaches and bad smelling mould".
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> At the ship, a steward would serve all men - solders, sailors and officials. All would get equal portions of food: 15 kilos of salty meat each month plus onion, vinegar and olive oil. However, captains could also bring with them chickens and sheeps and make use of it to improve their meals. During religious' fast-days, crew would be provided with rice, fish or cheese for substituting meat.
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> Solid food would be distributed once a month – always raw. It would have to be boiled everyday, but the use of fire on the deck was a constant threat. Wine and water would be provided every morning. Each man was entitled to 1.4 litre of wine, which was stored in round 200 pipes in each ship. The same portion of water – for drinking and cooking, would also be provided (1.4 l). Water,

stored in wooden barrels, would always be smelly and would cause diarrhoea and infections. During four weeks of travel, food would become rarer and by the end sailing cookies would be the only food remaining. There are no doubts that deficient food would kill as much as all sea dangerous".

Adapted from "A comida matava tanto quanto os perigos do mar" de Eduardo Bueno published at http://epoca.globo.com/especiais/500anos/990705.htm

2. Food preservation was one of the biggest problems for sailors' during long trips. You must ask students to imagine that each group is part of a scientific team studying food preservation at the time of Portuguese discoveries. To explore further this subject they will have the opportunity to travel back until the time of Discoveries. To do so, they will play the role of a vessel captain assessor. Their mission will consist of guarantying food preservation during that trip.

2.1 In order to prepare the trip, each group will make some research about this theme. To do so, they should explore the following website to learn more about food preservation and write the main ideas that will help each group playing the role of vessel captain assessor.
http://www.understandingfoodadditives.org/

2.2 As vessel captain assessor, each group must plan and execute an experiment to study which of the following substances are more effective for meat/fish preservation: salt, vinegar, garlic or pepper.

2.3 Students must share the results of the experimental study with their classmates.

2.4 Based on the group findings, students must prepare some written guidelines to help with the trip. These must be focused on alternative ways to improve food preservation on the 16th century.

2.5 Each group must share its findings with the rest of the class and write the main ideas reported by the whole class.

2.6 Each group writes a text with the information and knowledge it gained about methods of preserving food. The text should compares nowadays situation with the one lived by the Portuguese on the sea travelling era on the 16th century. Then, each group communicates to class their findings.

Bibliography

Bergreen, L. (2004). *Over the edge of the world: Magellan's terrifying circumnavigation of the globe.* Harper Collins.

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Population

8^{th} – 9^{th} grades

Curriculum context

Chemistry Sciences; Natural Sciences (Biology and Geology).

Kind of activity

Scientific investigation + problem solving + decision making

Anticipated time

3 lessons (40 to 50 minutes each)

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