

Mobiliteach Sectoral

Hospitality and STEAM Cross disciplinary didactics

Third Teacher Training
Athens 15 -18 November 2021



**DIDACTICS FOOD
LABORATORIES in
FONDAZIONE GOLINELLI**

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Objectives

Fondazione Golinelli aims to promote scientific education and creativity in children bringing girls and boys closer to science and technology through direct experimentation by fostering entrepreneurship, interdisciplinarity and innovation.



Methodology

Fondazione Golinelli experiments with innovative methodologies, working to combine three useful elements for the professional, human, and intellectual growth of younger generations: **knowledge** concerning all the scientific content on which educational proposals are based on; **know-how**, that is, the experiential component that passes through laboratory experiments and the use of new technologies and **knowing how to be**, that is, the soft skills that each of us began forming in childhood.



The spaces

- 3 main laboratories in which students can experiment innovative techniques in biology, biochemistry, molecular biology and microbiology;
- 1 maker space for robotics, coding, modeling and 3D printing activities;
- 1 laboratory for microscopy;
- 1 open space set up according to the planned activities;
- 2 full equipped vans to reach students and teachers all across Italy;
- on line activities.



Example of activities: determination of antioxidant power in beverages

Oxidative stress is associated with the development of several metabolic, chronic disorders or cancer.

Antioxidants contained in foods and beverages may help to protect our cells from the damage caused by free radicals produced by our body.

Students measure the antioxidant power of various beverages (using a *spectrophotometer*).



Molecular cuisine

Molecular Gastronomy is a scientific discipline that focuses on the physical and chemical transformations that occur during cooking.

Students perform some molecular cooking preparations, learning some of the basis of chemistry and physics.



Analysis of Lactase Activity

Lactase: is an enzyme located in the intestinal wall and is responsible for the **digestion** of lactose.

It is estimated that only 30% of adult humans retain the ability to digest lactose.

The rest of the adult population, who are therefore *intolerant*, usually consume low-lactose products: these foods can be obtained by **enzymatic immobilization** of the lactase enzyme.

- Students immobilize lactase to produce low-lactose milk



- Students examine the enzymatic activity of lactase (using a spectrophotometer)

Science at the table

Four weeks of free workshops for students (primary and secondary schools) on **food sustainability** and **nutrition science**.

Didactic proposals include both workshops in presence and online.

Activities deal with current issues related to the goals of the 2030 Agenda for Sustainable Development.



Example of activities: fruit and vegetables for every season



Fruits and vegetables should be the basis of an healthy and balanced diet, but this category of food is often **not appreciated** by children. Through **experiments** and creative **activities**, children are encouraged to adopt a positive approach to the consumption of fruit and vegetables.

Microplastics under the microscope



There are traces of microplastics in the seas and oceans all over the planet.

Students perform Microscopic observation

What are microplastics?

How they originate?

Why are they a problem for the environment and humans?

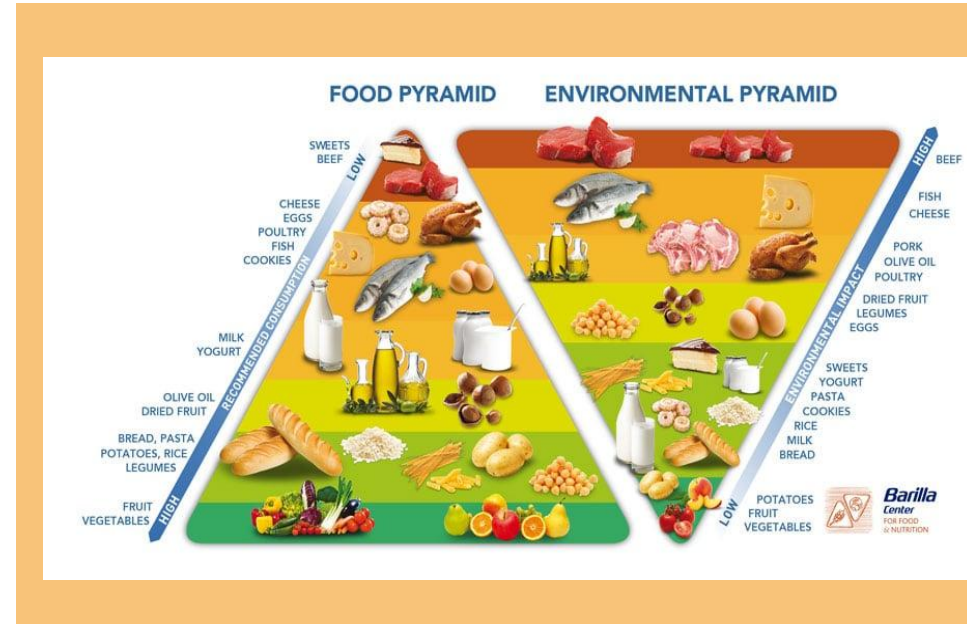
Students are challenged to find answer to these topical questions, reflecting on **how our lifestyle affects this problem.**

Eating in balance

Eating is a natural act... but do we really know what we find on our tables?

Through interactive activities students are guided on a journey to discover food and are encouraged to reflect on the role that nutrition has on their health and that of the environment.

From food to ecological pyramid participants understand the environmental cost of food production.



GOOD FOR FOOD

Cultivating health, education and food-environmental awareness



Promotes **food and environmental education** in schools:

- *healthy and conscious food choices*
- *environmental sustainability and organic farming*
- Educational activities for students (kindergarden, primary and secondary school)
- Outreach activities for students: summer camps, outdoor experiences
- Teacher training activities: workshops, courses
- Events for families and general public



Examples of didactic laboratories for students (6-13 y.o)

In presence or online!

FOOD AND SCIENCE: from biology to chemistry

- *Nutritional properties of food*
- *Biology and chemistry of digestion*
- *Physical-chemical transformation in cuisine*

FOOD AND CULTURE: a world of flavours

- *Cultural, symbolic and social meaning of food*
- *Supply chain / production process of local food*
- *Mechanisms behind taste perception*



THANKS FOR YOUR ATTENTION!

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