

Presentation of the project *European discoveries*

Too often science education contents itself with a presentation of the state of knowledge in science, suggesting that it is a collection of timeless truths. Yet, science has a history: controversies, tentative researches, reconsiderations, brilliant intuitions, stubborn errors; and also: significant anecdotes, discoveries that are representative of a period or country. Acknowledging the historical dimension of science is essential for the acquisition of scientific culture, for epistemological reflection, and for the molding of the citizen as well. Neglecting this aspect reduces science, as it is taught to children, to a list of laws, an accumulation of observations and meaningless experiments.

Intended at primary and secondary school students, the project *The Europe of scientific discoveries* proposes to study and reproduce in the classroom, with simple materials, great European discoveries and scientific inventions - with a choice of twelve discoveries, of seven European countries (Germany, France, Great Britain, Greece, Italy, Portugal and Switzerland). The proposed activities are intended to result from students' questioning, aroused by documentary research, works of fiction based on historical facts, animations ... A wide variety of documents and proposals for activities is available on the project's website (http://www.fondation-lamap.org/europe_des_decouvertes). The site also allows classes involved in the project to discuss their work and to make reports through individual and collective "experiment logbooks". At the end of the project, the work of each class will be published on the site – forming the germ of a science encyclopedia composed by students from different countries.

A space for teachers

In this space, two documents throw light on the 12 discoveries:

- a historical-scientific document clarifies the scientific basis of each discovery (the author carefully describes the experimental protocol implemented), while situating it in its context: scientific, technological and social. This text is intended to supplement (or revive) the scientific culture of the teacher, so as to enable her to satisfy the curiosity of the students and to back the implementation of the related activities;
- a pedagogical document provides clues for the implementation of experimental scientific activities in the classroom and texts aimed at the students. A group of texts, written especially for children, present each discovery as a fiction – but not as imaginary. They constitute a good starting point for classroom work: they can be used to stimulate the imagination, give rise to questions and prompt the discussion.

The texts, written by scientists, historians and educators from seven European countries, are complemented by an introduction by science historian Paolo Brenni, tracking the gradual development of a "Europe of science."

A space for students

This space, which is built around the 12 discoveries, gives access to two sections:

- an animation concerning the discovery and the scientist who made it; the animation is especially designed for children and based on the historical-scientific text intended at the teachers and available in their space;
- a game or a simulation based on a concept or a phenomenon related to the discovery. The simulations favor a process of investigation: the child can make assumptions, vary the parameters and draw conclusions. They can advantageously extend (but not replace) the work done in class by simulating experiments that are difficult to reproduce with the children.

Collaborative work

The project *The Europe of scientific discoveries* gives the opportunity to network with other classes and to initiate collaborative work with them. Various tools are available:

- a forum that brings together the teachers engaged in the project and its national coordinators (for France, Italy and Portugal);
- direct access to other classes and their work. From their personal workspace, students can easily contact other classes working on the same discovery and take cognizance of their work. This will encourage them to confront and share the progress of their own work.

The encyclopedia of discoveries

During the project, the writings of the students are available to registered classes only. Once the work is completed it will be validated by the project's coordinators and published on the project website. The work will then be available from the homepage of the site and from the experiments logbook, to serve as inspiration and reference to other students, the following years.

A European dimension

The originality of the project and of the website also lies in its European dimension. The history of science is approached from a perspective that highlights the diversity of the European scientific context - every country, every region contributing with its own genius, its perception of nature and of reasoning. This body of experience, successes and, sometimes, failures is part of our history. Europe is also very diverse in traditions and methods of teaching science: sometimes more experimental, other times more formal, somewhere more intuitive, elsewhere more deductive; pedagogy varies across periods and peoples, with different sensitivities and views of the child that can vary in time and space. We will not be surprised to sense, in the presented topics and in the ways of addressing them, differences in tone and some deviations from the founding ideas of *La main à la pâte*. We preferred to keep them rather than too polish angles to tackle a unique pedagogy.

Good journey in the Europe of science! David Jasmin