

# SUSTAINABILITY IN A SUITCASE

---

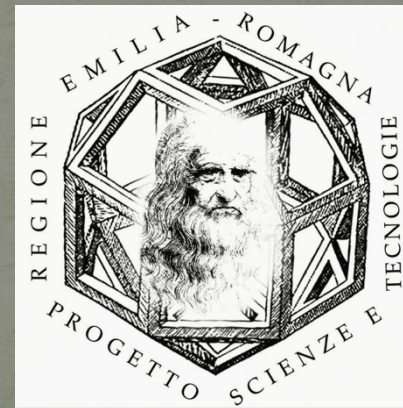
BUILDING A COMMON S&T KNOWLEDGE



N. Fellini



The project *Sustainability in a Suitcase* was conceived in the frame of the regional project “Science and Technology in Emilia Romagna”



Acquiring key competences through heritage education - Bologna 26-29 October 2011



The project, funded by the *Istituto dei Beni Culturali* of the Emilia Romagna Region, is the result of a strong collaboration between a company, a museum and a public school





# Controvento

is a cooperative society located in Emilia Romagna. It's an actor of non formal education to science and works at local and European level developing collaborative projects on *youth, science and society*



Acquiring key competences through heritage education - Bologna 26-29 October 2011



# Controvento

collaborates with local governments, universities, research centres, local health centres, scientific associations, museums and schools



Acquiring key competences through heritage education - Bologna 26-29 October 2011



# Controvento

is a member of the steering committee of the Italian *Consultation Body on Science and Society* and of the European network *Young People in Science and Society Issues (YPSSI)*

furthermore, collaborates with the young Europeans' network *Empowering Youth in a European Society (EYES)*



Acquiring key competences through heritage education - Bologna 26-29 October 2011



*Youth, science, technology, innovation, future, collaboration, citizenship and sustainability* are the keywords of the Controvento projects



Acquiring key competences through heritage education - Bologna 26-29 October 2011



# Museo di Scienze Naturali “Pietro Zangheri”



Located in Cesena, a city of 90.000 inhabitants, the Museum of Natural Science is the seat of educational workshops on science and technology

It's part of the network of the city museums, that welcomes around 10.000 students each year



# Istituto Tecnico Industriale “Blaise Pascal”



is a public secondary school where students specialize in *Electronics and Electrotechnics* or in *Computer Science and Telecommunications*

and offers students the opportunity to take part in European experiences through the Lifelong Learning Programme Comenius



# The roots of the project

- European Commission, 2010 - *Europe 2020: Europe's growth strategy*
- European Commission, 2009 - *European Research on Youth: supporting young people to participate fully in society*
- Edgar Morin, 1999 - *Seven Complex Lessons in Education for the Future*



# Europe 2020



In order to overcome an economic, climatic and social crisis of considerable measure, European Union wants to become a smart, sustainable and inclusive economy

To get the goal, the Union has set five ambitious objectives on employment, innovation, education, social inclusion and climate/energy to be reached by 2020





**We consider** these five issues fully interconnected.

We think they should be faced in an integrated way and the public involvement of **youth** should be promoted at each step

In order to achieve the objectives of the *Europe 2020 strategy* **we feel urgent** to foster public participation, to insist on collaboration as constitutional element of governance and to build a foresight culture



# European Research on Youth

Six factors seem to be relevant to the *youth public involvement*:

- actions have to be connected to their *curricula*
- actions have to be connected to *concrete* and programmed operations
- actions have to produce *competence*, but also *pleasure* and amusement
- their impact has to be *relevant* and visible
- they have to make young people *responsible* and autonomous
- in perspective, they can evolve in *transnational* actions





# Seven Complex Lessons in Education for the Future



The philosopher and sociologist Edgar Morin has defined seven facets of knowledge, essential to tackle the new global challenges:

- To teach what knowledge is
- To place all information within a context and an entity
- To teach the human condition
- To recognize our earth identity and citizenship
- To teach strategic principles for dealing with chance, the unexpected and uncertain
- To teach mutual understanding
- To contribute to an awareness of our *Earth-Homeland* and help to realize our earth citizenship



# Nature of the project

Following the guidelines and recommendations highlighted in the documents we chose as references, it was decided to work with - rather than for - young people and to launch a participatory design process towards knowledge, awareness and sustainability



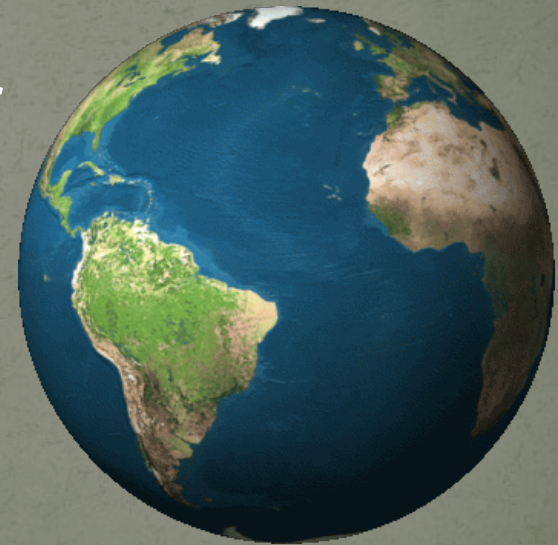
An empty suitcase represented the starting point of the project and the objective was to fill it - in a cooperative way - with the results of the process



# Why sustainability?

The main theme - *sustainability* - was chosen by trainers and teachers together. Actual and urgent, it's a complex subject to explore with multiple approaches and allow people to undertake deep and transversal studies because of the interdependence that it entails

Sustainability represents also an opportunity to promote not only knowledge but also the sense of belonging to a community and the participation in the management of the commons





# The challenge

The challenge was to create conditions in which young people, thinking, discussing and working together, were able to reach knowledge and awareness in an active and autonomous way

The path was built with young people: sixty five students attending the Public Technical Industrial Institute “Blaise Pascal”

During the process, adults - trainers and teachers - played the role of facilitators and creators of contexts in which young people could experience



# To jump the walls

When a school and a museum, teachers and trainers decide to work together on an arranged project, the first consequence is the encounter between formal and non formal education. As a consequence, it can emerge the need to rethink the conventional way to teach



This is what happened

The ordinary educational pathway was destructured and redesigned in function of the new objectives

Acquiring key competences through heritage education - Bologna 26-29 October 2011



This was translated in coordinated actions, in clear and well defined roles, in a schedule demanding flexibility from everyone



The new pathway was the result of a strong synergy between three different realities – the school, the museum and the company – and the derived project took root in the competence and resources of each actor



# Phase 1: the participatory design workshop

Once defined the container, it was necessary to select the contents

Young people, during a *scenario workshop* where a trainer played the role of the facilitator, explored the facets of sustainability and chose together what themes to study in depth





The subjects they selected are:



- The cohabitation on the globe
- The resources and their management
- Resources and human exploitation across the world
- Multinational companies and sustainable development
- Forms of energy, energy sources and energy choices
- The different types of pollution
- The impact of the industrial sector on environment
- Health, environment and sustainability
- Research and sustainability
- Controversial questions: nuclear energy, GMO, nanotechnologies



# Phase 2: researching in teams

Students clustered around the different subjects and formed small working groups. For some weeks, they researched information, mainly on internet, to increase knowledge and understanding

All findings were re-edited and collected in the *sustainability book* that grew throughout the project and represented the common stock of knowledge

All references were cited

The sustainability book became part of the contents of the suitcase on sustainability





# Phase 3: the experimental workshops

Concluded the research phase, teachers create conditions to allow students observe, experience and measure natural phenomena

The experimental workshops were in tune with the subjects indicated by the students

The protocols and the results were collected in the *Experiments book* and inserted in the suitcase





# Phase 4: testing the ideas

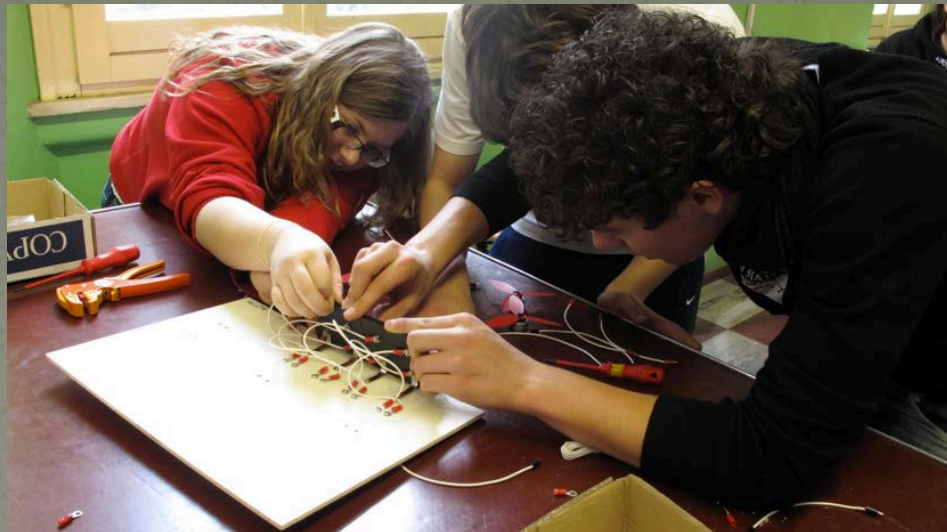
Since the early stages of the project, students showed to consider the issue of *energy choices* crucial for sustainability

To move from the theoretic level to the applied level, students designed and built a model of a solar power station. The school supported students by offering laboratories, competence and materials. The *solar power stations* were included in the suitcase

They completed their survey interviewing an engineer. The debate was focused on renewable energy and related curricula and careers





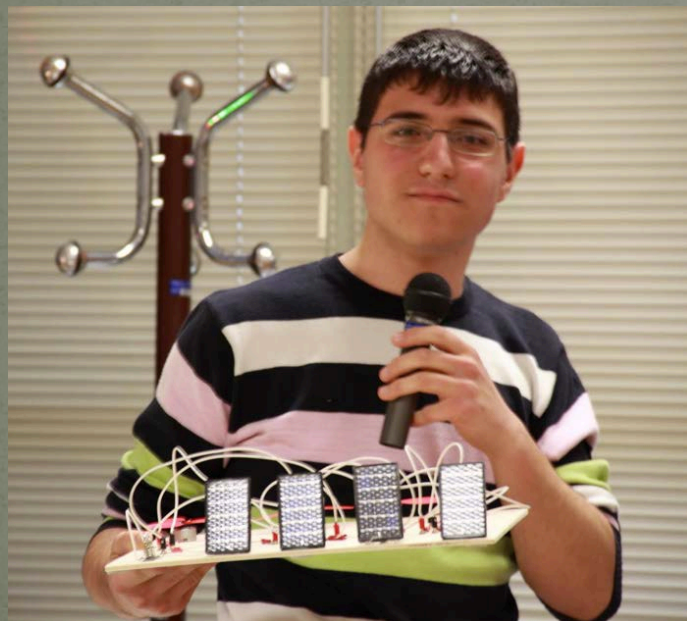


Acquiring key competences through heritage  
education - Bologna 26-29 October 2011



# Phase 5: sharing the knowledge

The experience lived by each working group was debated and transmitted to the other members of the school with a *peer to peer* approach during some formal and informal meetings



Acquiring key competences through heritage education - Bologna 26-29 October 2011



# Phase 6: to communicate findings

The process and the results were told to the town and district councillors. During a public meeting, students, teachers and trainers explained their role and their perspective on the project. The *participatory method* was at the centre of the discussion



Acquiring key competences through heritage education - Bologna 26-29 October 2011



# Evaluation tools

The documentation (discussions, books, reports, projects, videos) produced at each step allowed trainers to monitor the young people's motivation, the level of their participation, the degree of the consciousness about their role in the process, the quality of their research activities



Acquiring key competences through heritage education - Bologna 26-29 October 2011



# Results/1

- Teachers, trainers and students experienced a *different way* to educate and to learn
- All participants learned to enhance and to play on the *personal resources* of the different actors of the project
- During the process, students, who are conventionally beneficiaries of culture, became *producers of culture*
- Students demonstrated, in the appropriate context, to possess an *overall and deep view* of the problems



## Results/2

- During the learning process, students experienced the *autonomy* and their self-esteem increased
- The concept of complexity and interdependence, implicit in sustainability, fed the young people's *critical thinking*
- Students improved their ability to *imagine the future perspectives* in relation with the emerging local and global problems and solutions



# Criticality

The project demanded the perpetual adaptation and flexibility of all the actors of the project:

- teachers and trainers had to abandon their own way to teach and find together a new one
- they had to undertake an uninterrupted dialogue to build step by step a common course

This experience demanded a lot of energy!!



# Conclusions

In a world complex, uncertain and in perpetual evolution, that poses new challenges to individuals, cultures and societies, *the role of education is crucial* and it's necessary to elaborate new educational strategies

It's urgent:

- to invest on *cooperation* between all people acting in the education: parents, teachers, pedagogists, educators
- to invest on the *research* of new pedagogic tools to help young people to *decode* the complexity and understand the interdependencies
- To let young people have an *active role* in the educative process, investing on their social and intellectual skills and promoting their *public involvement*