



Edmuse project

O1 Intellectual Output - Best practices analysis - Greece

1) Description of Education System of each country and correspondence school level s of 8 to 12 age (Eurydice) and related school curriculum

The Greek Educational system provides public and private education in three levels:

- a) Primary Education: Kindergarten (4-6 level) and Primary School (6-12 level).
- b) Secondary Education: Gymnasium (12-15 level) and Lyceum (15-18 level).
- c) <u>Higher Education</u>: Universities and Technological Educational Institutes, through a National Exam System.

The 8 to 12 level in Greek Primary School concerns the Third, Fourth, Fifth and Sixth Grade.

Most primary schools in Greece function in a double time-zone:

Morning Zone - optional:

07:00-08:00

Morning Mandatory Programme:

08:00-02:00

Afternoon Zone-optional

14:05-16:15

The subjects offered are: Greek language, Mathematics, History, Natural Sciences, ICT, Religions, Physical Education, Educational Drama, Art courses and English language





2) National recommendations and guidelines for preparation and implementation of curricular materials

The Greek National Curriculum about the Natural Sciences for levels 8 to 12, introduces gradually the Natural Sciences to the students, starting from the levels 8 to 10. During these two levels the curriculum aims first of all at exercising children on observation, research, interpretation of various phenomena using a multi disciplinary approach. In other words aims at cultivating on one hand an holistic idea of the natural world and on the other hand on highlighting the basic characteristics of a researcher. Thus, from level 8 to 10 the curriculum, through the subject "Environmental Study", includes disciplines of Physics, Chemistry, Biology and Geography. In details, the curriculum includes the categories of plants and animals, the movement of the sun and the moon, the function of the human body, the energy, the mixtures, the light, the soil and finally the Greek geography, use of maps and Greek ecosystems .

During the levels 10 to 12, the National Greek Curriculum introduces students to Natural Sciences in a more explicit and scientifically orientated way, in order to construct basic knowledge and to appreciate the role of Natural Sciences in the human civilization. The subject is named "Investigating the natural world" and includes the following thematics:

Level 10 to 11:

- Properties of material
- Solutions
- Molecules and atoms
- Cells
- Movement and Forces
- Geology
- Weight and mass
- Human body, circulatory and digestion system and hearing
- Energy
- Light
- Sound

Level 11 to 12:





- Acids, bases, salts
- Energy and its forms
- Mineral carbons and natural gus
- Energy in plants and ecosystems
- Respiratory system and vision
- Electro magnetism
- 3) Experiences or recommendations about the use of cultural heritage, especially if issued from scientific museums, and about the use of ICTs by science teachers
 - Eugenides Foundation (http://www.eugenfound.edu.gr)

Suggests a hidden treasure game, based in a given scenario, in order students to visit its exhibition of interactive experiments on Natural Sciences

Offers a very useful on line educational package for the educator

• Open Discovery Space (http://opendiscoveryspace.eu/target-group/teachers)

Open Discovery Space is a pioneering European Commission platform that connects teachers and learners across Europe with the rich array of digital learning resources currently available in online collections. Open Discovery Space is always looking to expand the range of content we offer and for our affiliated content providers enjoy a wide range of benefits from offering their collections through the platform. Open Discovery Space offers content owners and data providers a unique opportunity to take your material directly into thousands of European classrooms

• Inspiring Science Education (http://www.inspiringscience.eu/project)





Our mission in the Inspiring Science Education team is to provide digital resources and opportunities for teachers to help them make science education more attractive and relevant to students' lives. Through the Inspiring Science Education website and the activities organised by the partners, teachers can help students make their own scientific discoveries, witness and understand natural and scientific phenomena and access the latest, interactive tools and digital resources from within their classrooms.





4) Experiences and materials for making cross-disciplinary didactic units

In Greek primary education are taking place innovative cross-disciplinary projects about various subjects, generated from the Department of Cultural Education of every prefecture of the country.

The Department of Cultural Education of Achaia in cooperation with the Museum of Science and Technology of the University of Patras, organized a network of schools, among them was also the 46th Primary School of Patras, in order to create cross-disciplinary didactic units, based on various exhibits of the museum.

Many aspects of science and technology were approached through art, theater and music, such as the function of a pc, the function of the telephone and the radio.





- 5) Experiences of innovative practices in science teaching and in evaluating the impact for learning improvement
 - The network mentioned on the previous section is also an innovative practice in science teaching which has been evaluated and has proven very efficient.
 - Also in the wiki space (http://nikolaosmanesis.wikispaces.com/), the primary teachers of Achaia share teaching material and educational practices on Methodology and Didactics on Physics (avaliable only in Greek).





6) Possible issues and concerns

- A possible concern as far as the sharing of the museum content in digital platforms is that it isn't always possible, especially if matters of copyright are issued.
- Could the various disciplines that we tend to integrate in a didactic unit contradict?
 Eg: Teaching 8 year-olds about the fermentation, that is the chemical procedure
 which transforms must (from the grapes) to wine, could our reference to Mythology
 and Dionysus disorientate the students from our goal to overcome the mythic
 explanations and focus to scientific ones? (source,

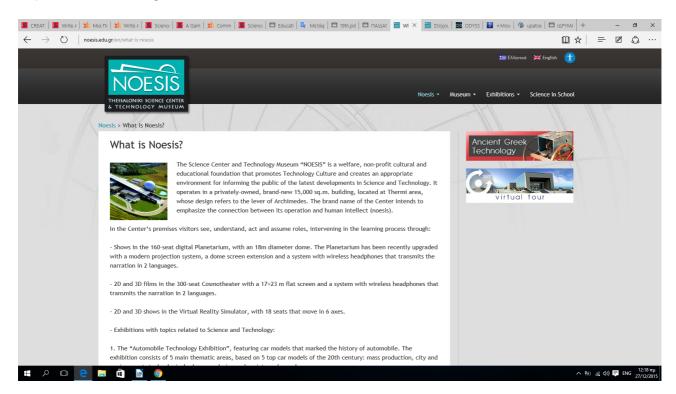
http://www.necsi.edu/research/management/education/teachandlearn.html)





7) Do you know any concrete museum experience of museums using/share its heritage, also online, to help teacher to teach science? If yes, please describe and provide references.

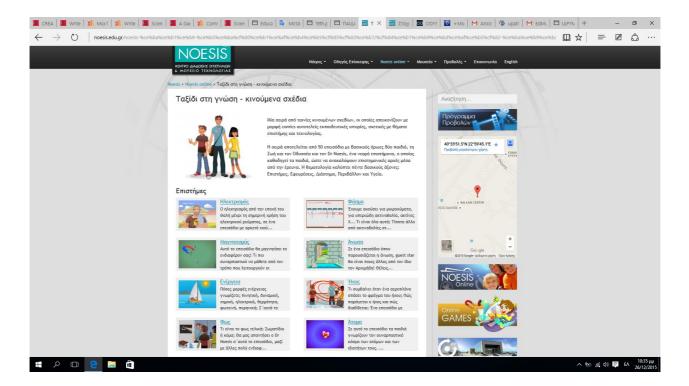
The Science Center and Technology Museum "Noesis" http://www.noesis.edu.gr/



Noesis online





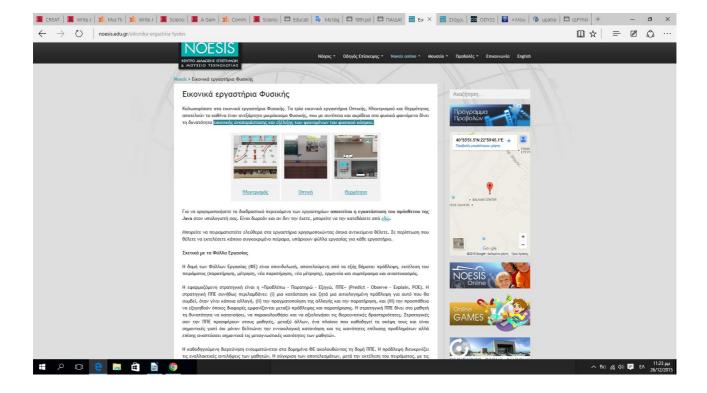


A journey to knowledge

A series of animated cartoons telling independent educational stories related to science and technology. There are fifty episodes with basic heroes two children, Zoe and Odysseas as well as Dr. Noesis, a young scientist who guides children to discover scientific principles through inquiry. The themes concern five axes: Science, Inventions, Space, Environment, Health.





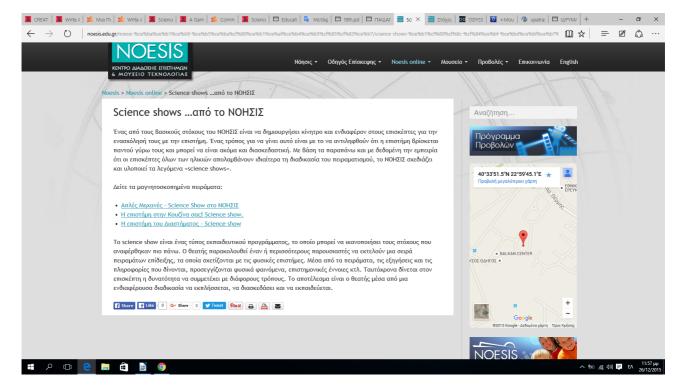


Iconic Physics LaboratoriesWelcome to Iconic Physics Laboratories concerning Optics, Electricity, Heat. Each one of them consists an independent microcosm of Physics that provides the ability of virtual reconstruction and development of the phenomena of the natural world. For each workshop there are worksheets with the Welcome to physics, Laboratories the experiment of the phenomena of the natural world. For each workshop there are worksheets with the Melcome to physics, Laboratories the experiment of the phenomena of the natural world. For each workshop there are worksheets with the following steps: prediction, performing the experiment (observation, measurement, new observation, new measurement, interpretation, conclusion, rethinking. The implemented strategy is: Predict-Observe-Explain.

Prediction clarifies the children's alternative ideas and the comparison between the results after the experiment and the predictions can lead to the improvement or the review of the children's alternative ideas.







Science shows from Noesis

One of the basic aims of Noesis is to create a motive to the visitor to deal with Science. One way of doing that is to make them understand that Science is all around them and can be even fun.

Having in mind that visitors of all ages enjoy the procedure of an experiment, Noesis designs and implements the so called "Science Shows".

You can watch the recorded experiments:

- Simple machines
- Science in your kitchen
- Space Science

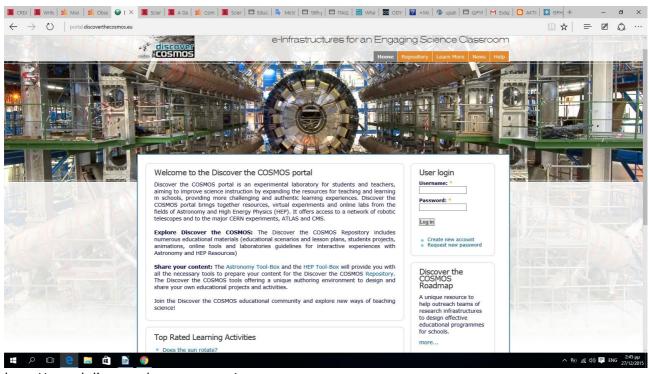
A Science Show is a kind of an educational programme that can achieve the goals mentioned before. The viewer watches one or more presenters performing experiments related to Natural Sciences. Through the experiment, the interpretation and the information given the viewer is educated while having fun.

The Noesis site also includes a **technology wiki**, 3-D photos of its exhibits, blogs etc.





Portal: Discover the COSMOS

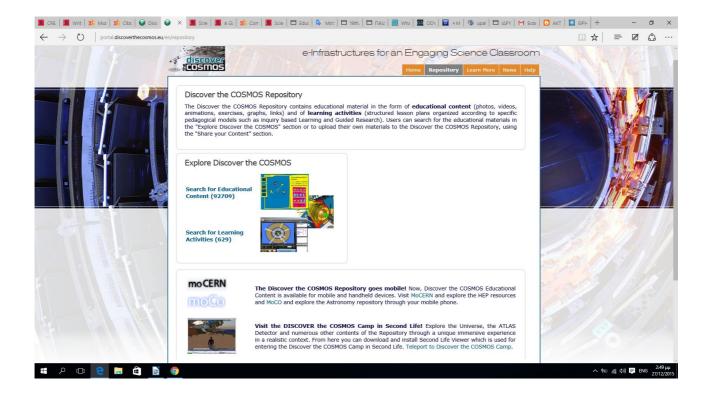


http://portal.discoverthecosmos.eu/

COSMOS Repository Educational Material







Portal: Inspiring Science Education Resources Digital Tools Repository





