



Edmuse project

O1 Intellectual Output – Best practices analysis – Greece

1) Description of Education System of each country and correspondence school levels 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) Higher Education: 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 gas
- 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 (available 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/>

What is Noesis?

The Science Center and Technology Museum "NOESIS" is a welfare, non-profit cultural and educational foundation that promotes Technology Culture and creates an appropriate environment for informing the public of the latest developments in Science and Technology. It operates in a privately-owned, brand-new 15,000 sq.m. building, located at Thessaloniki area, whose design refers to the lever of Archimedes. The brand name of the Center intends to emphasize the connection between its operation and human intellect (noesis).

In the Center's premises visitors see, understand, act and assume roles, intervening in the learning process through:

- Shows in the 160-seat digital Planetarium, with an 18m diameter dome. The Planetarium has been recently upgraded with a modern projection system, a dome screen extension and a system with wireless headphones that transmits the narration in 2 languages.
- 2D and 3D films in the 300-seat Cosmotheater with a 17x23 m flat screen and a system with wireless headphones that transmits the narration in 2 languages.
- 2D and 3D shows in the Virtual Reality Simulator, with 18 seats that move in 6 axes.
- Exhibitions with topics related to Science and Technology:

1. The "Automobile Technology Exhibition", featuring car models that marked the history of automobile. The exhibition consists of 5 main thematic areas, based on 5 top car models of the 20th century: mass production, city and

Ancient Greek Technology

virtual tour

Noesis online



NOESIS
ΚΕΝΤΡΟ ΔΙΑΔΟΣΗΣ ΕΠΙΣΤΗΜΩΝ & ΜΟΥΣΕΙΟ ΤΕΧΝΟΛΟΓΙΑΣ

Νόημα - Οδηγός Επισκεψής - Noesis online - Μουσείο - Προβολές - Επικοινωνία - English

Noesis > Noesis online > Ταξίδι στη γνώση - κινούμενα σχέδια

Ταξίδι στη γνώση - κινούμενα σχέδια

Μία σειρά από ταινίες κινούμενων σχεδίων, οι οποίες απεικονίζουν με μορφή comics αυτοτελείς εκπαιδευτικές ιστορίες, σχετικές με θέματα επιστήμης και τεχνολογίας.

Η σειρά αποτελείται από 50 επεισόδια με βασικούς ήρωες δύο παιδιά, τη Ζωή και τον Οδυσσέα και τον Dr Noesis, ένα νεαρό επιστήμονα, ο οποίος καθοδηγεί τα παιδιά, ώστε να ανακαλύψουν επιστημονικές αρχές μέσα από την έρευνα. Η θεματολογία καλύπτει πέντε βασικούς άξονες: Επιστήμες, Εφευρέσεις, Άδραση, Περιβάλλον και Υγεία.

Επιστήμες

- Ηλεκτρισμός**
Ο ηλεκτρισμός από την εποχή του θαλάσσιου μέγαρα τη σημαντική χρήση του ηλεκτρικού ρεύματος, σε ένα επεισόδιο με αρκετά χιούμ...
- Μηχανισμός**
Αυτή το επεισόδιο θα μαγειρέψει το ενδιαφέρον σας! Τι πιο συναρπαστικό να μάθετε από τον τρόπο που λειτουργούν οι...
- Ενέργεια**
Πόσες φορές ενέργειας γνωρίζετε; Κινητική, δυναμική, χημική, ηλεκτρική, θερμότητα, φωτεινή, πυρηνική; Σ' αυτό το...
- Φως**
Τι είναι το φως τελικά; Συμπεριφέρεται ή κύμα; Θα μας απαντήσει ο Dr Noesis σ' αυτό το επεισόδιο, μαζί με άλλες πολύ ενδιαφέρ...
- Φύση**
Εκουμε ακούσει για μικροκόσμο, για υπερίσχυση ακτινοβολία, ακτίνες X... Τι είναι όλα αυτά; Τιποτα άλλο από ακτινοβολίες στ...
- Ακουστική**
Σε ένα επεισόδιο όπου παρουσιάζεται η άκουση, guest star θα είναι ποιος άλλος από τον ίδιο τον Αρμυνιάδη! Θέλετε...
- Ποσειδών**
Τι συμβαίνει όταν ένα αεροπλάνο σπάσει το φράγμα του ήχου; Πώς παράγεται ο ήχος και πώς διαδίδεται; Ένα επεισόδιο με...
- Αστρονομία**
Σε αυτό το επεισόδιο τα παιδιά γνωρίζουν τον συναρπαστικό κόσμο των ατόμων και των ιδιοτήτων τους...

Αναζήτηση...

Προγραμμα Προβολών

40°33'51.5"N 22°59'45.1"E
Προβολή μεγεθύνου χάρτη

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NOESIS Online

Online GAMES

18:35 μμ
26/12/2015

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.






NOESIS
ΚΕΝΤΡΟ ΔΙΑΔΟΣΗΣ ΕΠΙΣΤΗΜΩΝ
& ΜΟΥΣΕΙΟ ΤΕΧΝΟΛΟΓΙΑΣ

Νήπρις - Οδηγός Επίσκεψης - Noesis online - Μουσείο - Προβολές - Επικοινωνία - English

Νοesis > Εικονικά εργαστήρια Φυσικής

Εικονικά εργαστήρια Φυσικής

Καλωσορίστε στα εικονικά εργαστήρια Φυσικής. Τα τρία εικονικά εργαστήρια Οπτικής, Ηλεκτρισμού και Θερμότητας αποτελούν το καβένι έναν ανεξάρτητο μικρόκοσμο Φυσικής, που με συνέπεια και ακρίβεια στα φυσικά φαινόμενα δίνει τη δυνατότητα εικονικής αναπαράστασης και εξέλιξης των φαινομένων του φυσικού κόσμου.

[Ηλεκτρισμός](#) [Οπτική](#) [Θερμότητα](#)

Για να χρησιμοποιήσετε το διαδραστικό περιεχόμενο των εργαστηρίων απαιτείται η εγκατάσταση του πρόσθετου της Java στον υπολογιστή σας. Είναι δωρεάν και αν δεν την έχετε, μπορείτε να την κατεβάσετε από [εδώ](#).

Μπορείτε να περαματιντέτε ελζθέτερα στα εργαστήρια χρησιμοποιώντας όποια αντικείμενα θέλετε. Σε περίπτωση που θέλετε να εκτελέσετε κάποιο συγκεκριμένο πείραμα, υπάρχουν φύλλα εργασίας για κάθε εργαστήριο.

Σχετικά με τα Φύλλα Εργασίας

Η δομή των Φύλλων Εργασίας (ΦΕ) είναι σπονδυλωτή, αποτελούμενη από τα εξής θήματα: πρόβλεψη, εκτέλεση του πειράματος (παρατήρηση, μέτρηση, νέα παρατήρηση, νέα μέτρηση), ερμηνεία και συμπεράσμα και αναστοκαγμός.

Η εφαρμοζόμενη στρατηγική είναι η «Πρόβλεψη - Παρατηρώ - Εξηγώ, ΠΠΕ» (Predict - Observe - Explain, POE). Η στρατηγική ΠΠΕ συνήθως περιλαμβάνει: (i) μια κατάσταση και ζητά μια αιτιολογημένη πρόβλεψη για αυτό που θα συμβεί, όταν γίνει κάποια αλλαγή, (ii) την πραγματοποίηση της αλλαγής και την παρατήρηση, και (iii) την προσπάθεια να εξηγηθούν όποιες διαφορές εμφανίζονται μεταξύ πρόβλεψης και παρατήρησης. Η στρατηγική ΠΠΕ δίνει στο μαθητή τη δυνατότητα να κατανοήσει, να παρακολουθήσει και να αξιολογήσει τις διερευνητικές δραστηριότητες. Επιδραστηνικές σαν την ΠΠΕ προσφέρουν στους μαθητές, μεταξύ άλλων, ένα πλαίσιο που καθοδηγεί τη σκέψη τους και είναι σημαντικές γιατί όχι μόνον βελτιώνουν την εννοιολογική κατανόηση και τις ικανότητες επίλυσης προβλημάτων αλλά επίσης αναπτύσσει σημαντικά τις μεταγνωστικές ικανότητες των μαθητών.

Η καθοδηγούμενη διερεύνηση ενσωματώνεται στα δομημένα ΦΕ ακολουθώντας τη δομή ΠΠΕ. Η πρόβλεψη διευκρινίζει τις εναλλακτικές αντιλήψεις των μαθητών. Η σύγκριση των αποτελεσμάτων, μετά την εκτέλεση του πειράματος, με τις

Αναζήτηση...

Πρόγραμμα Προβολών

40°33'51.5"N 22°57'45.1"E
Προβολή μεγάλου χάρτη

BALKAN CENTER
7505 ΟΛΥΜΠΟΣ

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NOESIS Online

Online GAMES

11:23 μμ
26/12/2015

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 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

Discover the COSMOS portal is an experimental laboratory for students and teachers, aiming to improve science instruction by expanding the resources for teaching and learning in schools, providing more challenging and authentic learning experiences. Discover the COSMOS portal brings together resources, virtual experiments and online labs from the fields of Astronomy and High Energy Physics (HEP). It offers access to a network of robotic telescopes and to the major CERN experiments, ATLAS and CMS.

Explore Discover the COSMOS: The Discover the COSMOS Repository includes numerous educational materials (educational scenarios and lesson plans, students projects, animations, online tools and laboratories guidelines for interactive experiences with Astronomy and HEP Resources)

Share your content: The Astronomy Tool-Box and the HEP Tool-Box will provide you with all the necessary tools to prepare your content for the Discover the COSMOS Repository. The Discover the COSMOS tools offering a unique authoring environment to design and share your own educational projects and activities.

Join the Discover the COSMOS educational community and explore new ways of teaching science!

User login

Username:

Password:

[Log in](#)

[Create new account](#)

[Request new password](#)

Discover the COSMOS Roadmap

A unique resource to help outreach teams of research infrastructures to design effective educational programmes for schools.

[more...](#)

Top Rated Learning Activities

- Does the sun rotate?

<http://portal.discoverthecosmos.eu/>

COSMOS Repository
Educational Material



portal.discoverthecosmos.eu/en/repository

e-Infrastructures for an Engaging Science Classroom

Home Repository Learn More News Help

Discover the COSMOS Repository

The Discover the COSMOS Repository contains educational material in the form of **educational content** (photos, videos, animations, exercises, graphs, links) and of **learning activities** (structured lesson plans organized according to specific pedagogical models such as inquiry based Learning and Guided Research). Users can search for the educational materials in the "Explore Discover the COSMOS" section or to upload their own materials to the Discover the COSMOS Repository, using the "Share your Content" section.

Explore Discover the COSMOS

Search for Educational Content (92709)

Search for Learning Activities (629)

moCERN

moGo

The Discover the COSMOS Repository goes mobile! Now, Discover the COSMOS Educational Content is available for mobile and handheld devices. Visit MoCERN and explore the HEP resources and MoGo and explore the Astronomy repository through your mobile phone.

Visit the DISCOVER the COSMOS Camp in Second Life! Explore the Universe, the ATLAS Detector and numerous other contents of the Repository through a unique immersive experience in a realistic context. From here you can download and install Second Life Viewer which is used for entering the Discover the COSMOS Camp in Second Life. Teleport to Discover the COSMOS Camp.

Portal: Inspiring Science Education Resources Digital Tools Repository



inspiring SCIENCE education

Username or e-mail Password

LOGIN Request new password

New in ISE? Join Now!

RESOURCES DIGITAL TOOLS REPOSITORY COMMUNITIES SCHOOLS PEOPLE ACADEMIES

inspiring SCIENCE education User Guide

SEARCH → USE → MODIFY → CREATE Educational Resources

HOME

After you have created your account in Inspiring Science Education, there a number of different things you can find to use in your classroom. This page will guide you through all your options and the steps you have to follow to really take advantage of all the features provided by the Inspiring Science Education portal.

SEARCH
for educational resources

USE
them in your classroom

MODIFY
them according to your needs

CREATE
your own resources

Joining or creating a Community

The portal aims at promoting a genuine collaborative approach to science education and teaching through building communities of practice. These communities are the heart of Inspiring Science Education, so as soon as you register, join a community and join other educators in searching, using, modifying and creating teaching materials. More information on communities on how to join can be found on the [Communities](#) page of the website, while information on how to create a community can be found on the create Community mini guide.

You are a full member of the the Community, how do you proceed?

You can search for educational resources created by others, use them in your classroom, modify them according to your own particular needs and classroom reality and create your own resources. Let's look at each of the things you can do in detail.

◀ Select one of the options on the left to learn more about each step

3:08 pm 27/12/2015