



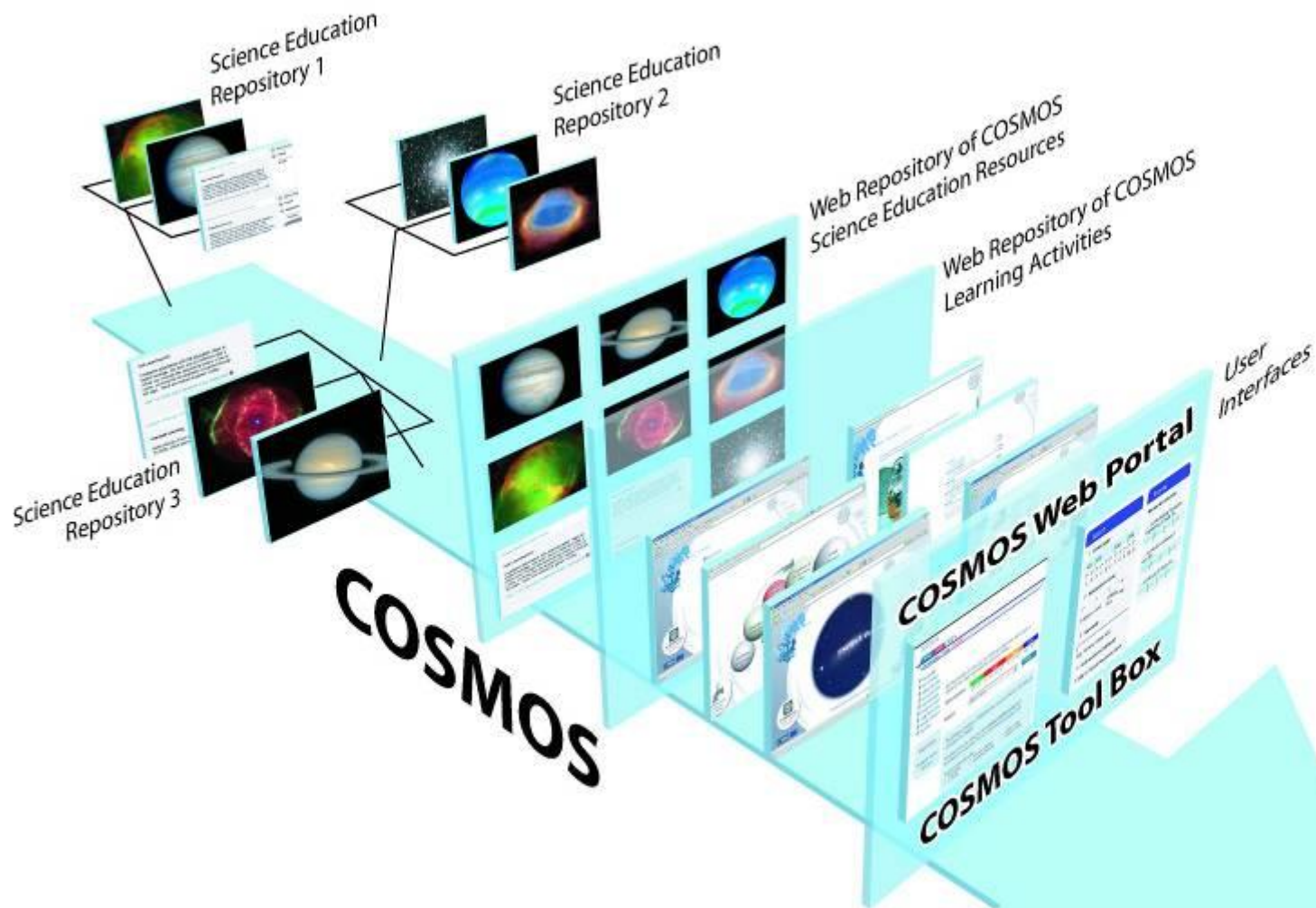
Educational Portals Examples and Practices

Sofoklis A. Sotiriou and Emmanuel Chaniotakis



- Tools and Data Repositories, Educational Portals and Content Aggregators
- Search Mechanisms
- Community Support Environments
- Authoring and Content Enrichment Tools
- Users support
- Monitoring and Impact Assessment
- Conclusions

Presentation Overview



unification of the existing tools and on-line materials

My
D-Space

The Sun

- Sun as a star (3) **view**
- Solar Rotation (3) **view**

Planets and Moons

- Characteristics of a Planet (30) **view**
- The Characteristics of the Surface of the Moon (44) **view**

Asteroids

- Characteristics of Asteroids (1) **view**
- Rotation of Asteroids (1) **view**

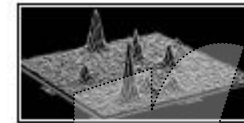
Birth and Death of Stars

- Birth of Stars (9) **view**
- Death of Stars (8) **view**

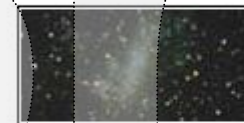
Galaxies

- Characteristics of Normal Galaxies (56) **view**

Universities



1. CCD image analysis



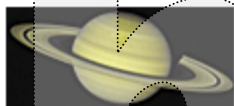
2. CCD photometry



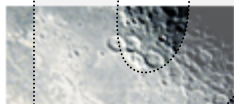
3. Colour in astronomy



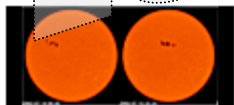
4. Detection of binary stars



1. Measuring the size of Saturn's Rings



2. Measuring the height of the Lunar Craters



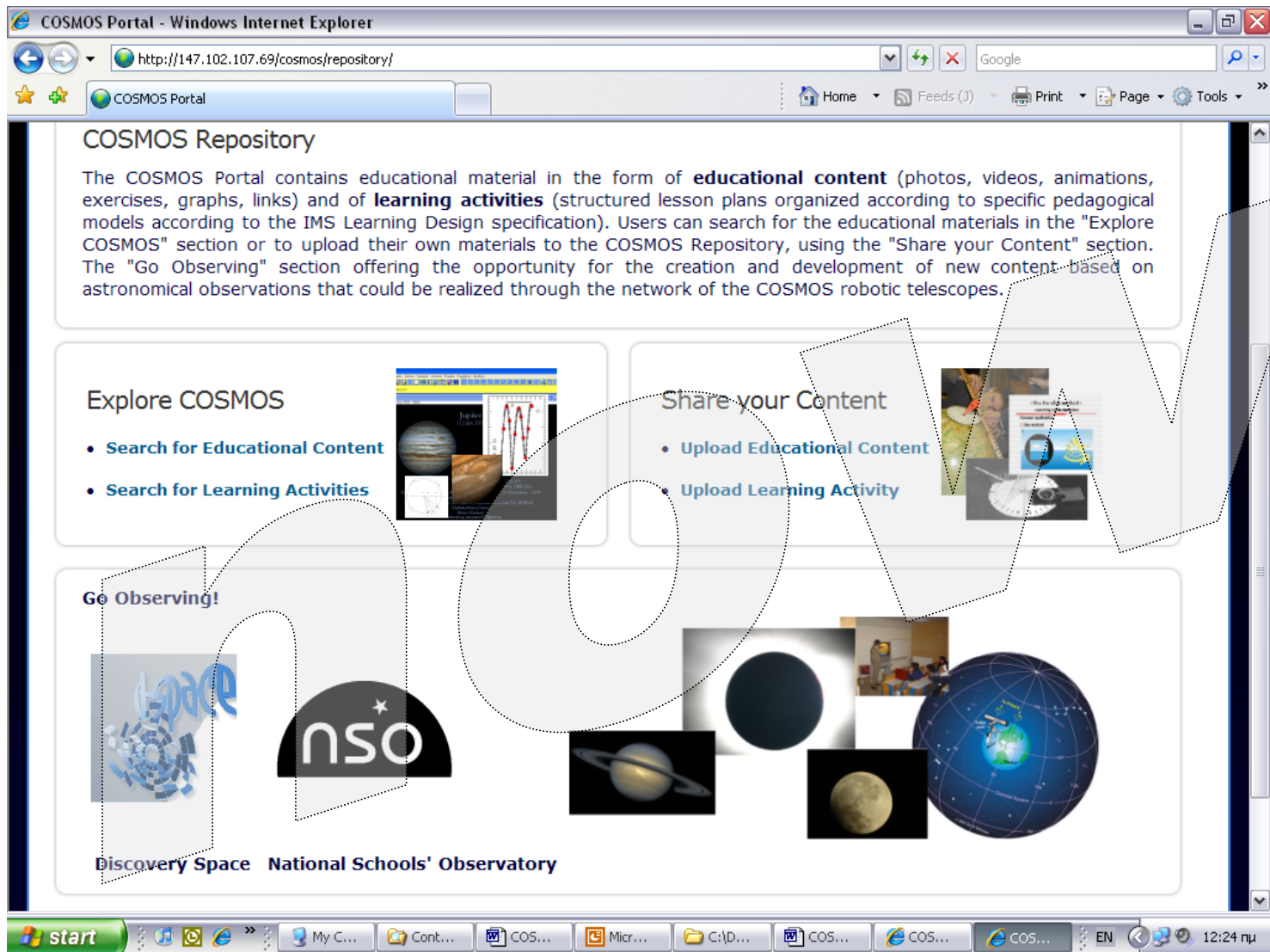
3. Measurement of the Solar Rotation



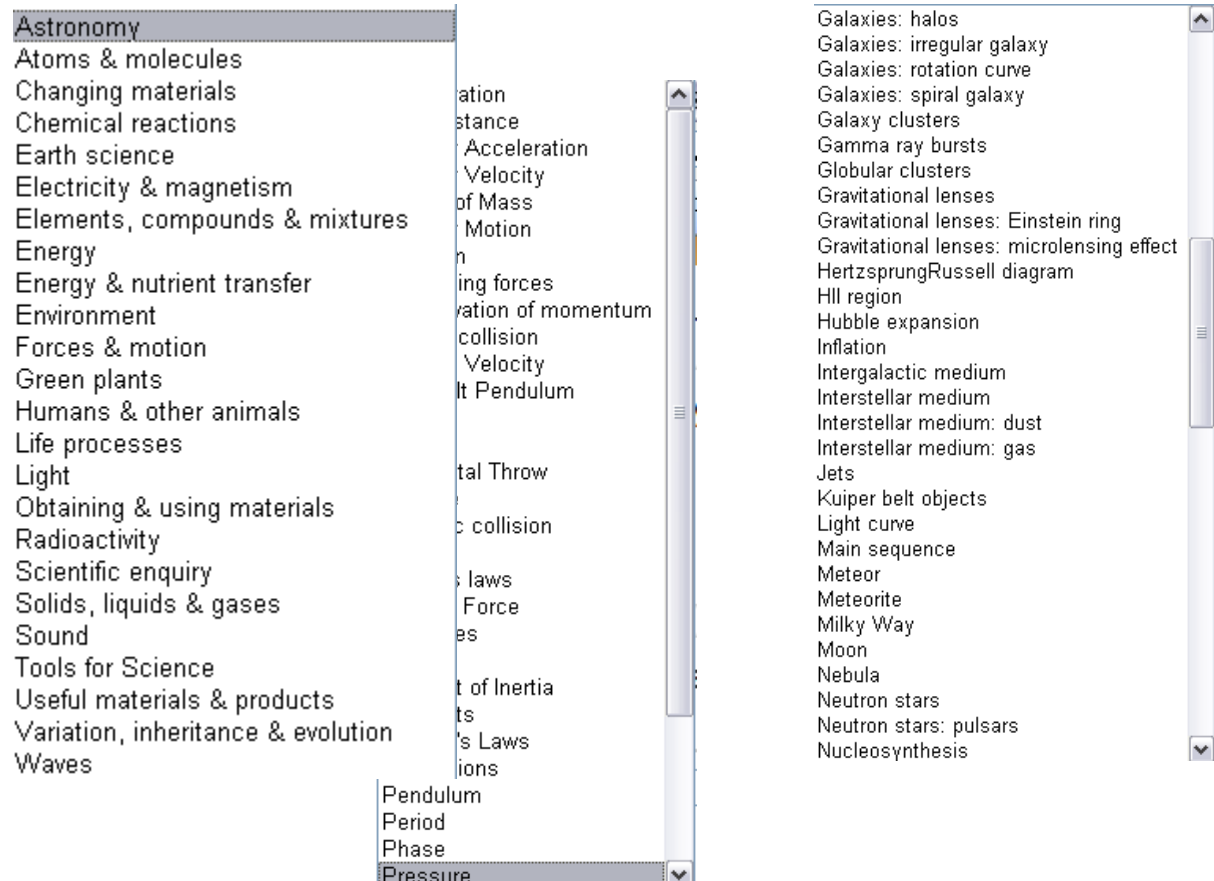
4. Determination of Asteroids Rotation Periods



ELLINOGERMANIKI AGOGI



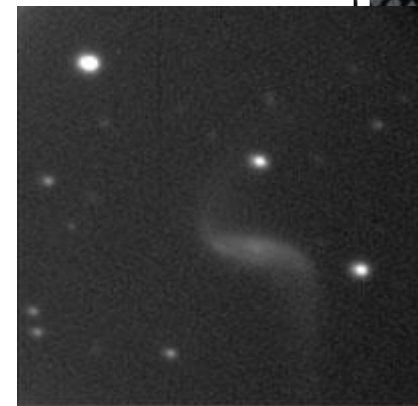
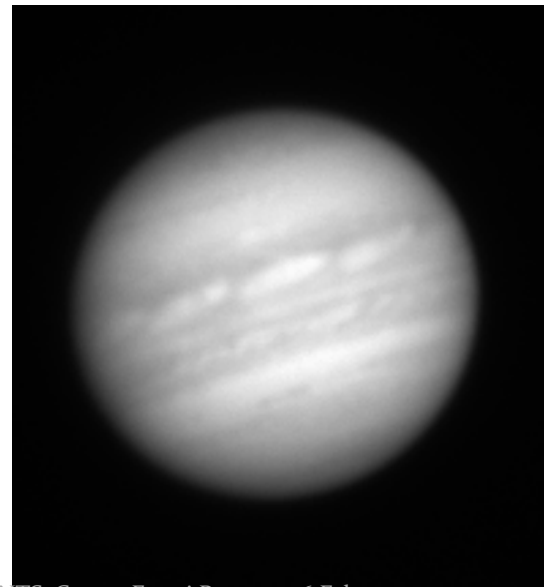
Organized according to the science curriculum



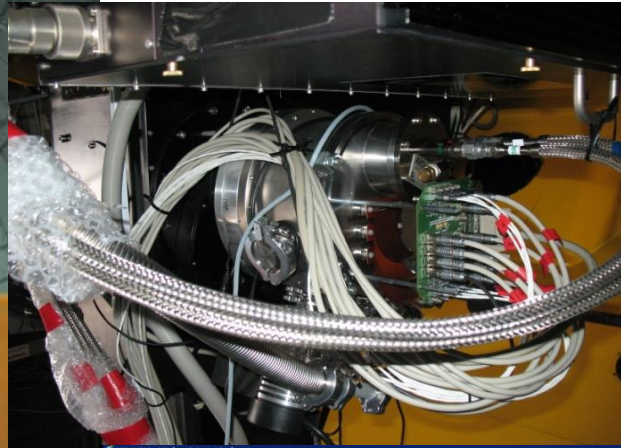
**24 categories with overall 424 terms for several science
ects (mechanics, astronomy, E/M, waves,...)**



Access to Real Data...



...advanced
infrastructures...



ASX CLIENT - Windows Internet Explorer

http://136.91.240.171/30/index.asp

File Edit View Favorites Tools Help

ASX CLIENT

Main Page Control ViewLog ContactUs

Discovery Space

SINGLE OBSERVATION

Object: M31
 RA: 00 h 43 m 05 s
 Dec: 41° 14' 09"
 Exposure: 100 s
 Filter: R

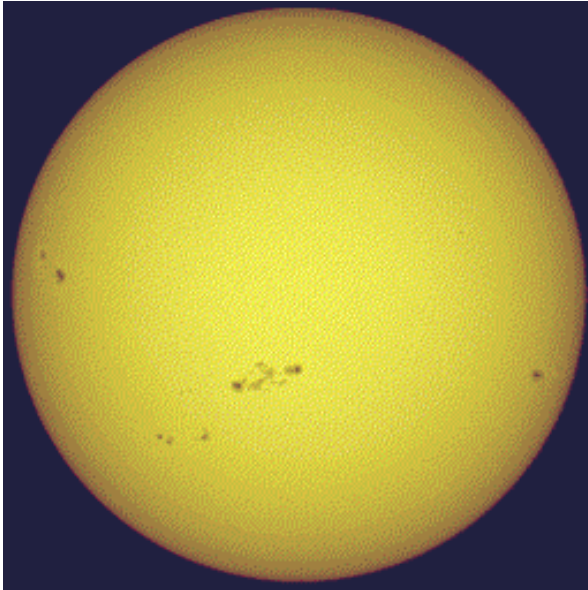
Submit

STATUS: Tracking
 Sidereal: 14:34:03
 R.A.: 12:53:41
 Declination: 35° 15' 50"
 Azimuth: 288.32°
 Altitude: 68.6°
 UTC: 9/24/2008 10:59:34 AM
 Cam Temp: 3.40282346638529E+18°C

Weather Data
 Date / Time: 24/09/2008 04:20:28
 Temperature In: 18.7°C
 Temperature Out: 10.4°C
 Humidity In: 39%
 Humidity Out: 32%
 Wind Speed: 16.2Kmh
 Wind Direction: 248°

Object	Date / Time	RA	Dec	Filter	Exposure	Filter	Filter	Filter	Filter	Filter
M31-SE-1	24-9-2008 4:05:19 sp.	00:43:06	41° 14' 04"	R	100	01598 M31_SE_1 R&M31-SE-1@ASTEFAN Sh130 R.#				ASTEFAN
M31-SW-4	24-9-2008 4:03:09 sp.	00:42:19	41° 14' 20"	R	100	01597 M31_SW_4 R&M31-SW-4@ASTEFAN Sh130 R.#				ASTEFAN
M31-SW-3	24-9-2008 4:00:59 sp.	00:42:19	41° 14' 10"	R	100	01596 M31_SW_3 R&M31-SW-3@ASTEFAN Sh130 R.#				ASTEFAN
M31-SW-2	24-9-2008 3:58:49 sp.	00:42:18	41° 14' 15"	R	100	01595 M31_SW_2 R&M31-SW-2@ASTEFAN Sh130 R.#				ASTEFAN

...and high
quality content



User Generated Content...

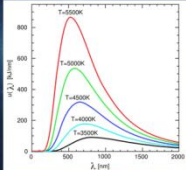
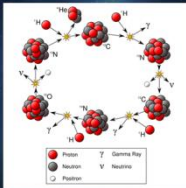
Educational Phase 4

Explanation based on evidence
The teacher gives correct explanations for

- Hertzsprung Russell diagram using the interactive diagram on <http://www.astro.uni-konn.de/~jwehrd/>
- Wien's displacement law and Stefan-Boltzmann law
- the proton-proton chain and the CNO cycle (Bethe-Weizsäcker-cycle)

Consider other explanations

- Each group of students evaluates its explanations in light of alternative explanations.



Manfred Lohr m.lohr@uni-konn.de
BO/BRG Schwechat www.bgschwechat.ac.at

COSMOS

COSMOS – Cosmic Velocities

Mag. Ronald Binder
Mag. Veronika Ruedegger

Lesson plan






Guided Research Model

www.virtuelleschule.at/inlot

<Dark Matter>

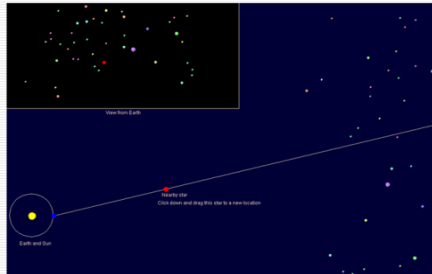
- Educational Phase 1: Stimulation**
 - Presentation/Discussion:**
motivation by emotion (pictures of galaxies)

[1] HST observation of M51 „Whirlpool Galaxy“ [2] HST observation of M104 „Sombrero Galaxy“

<The Parallax method>
Learning cycle template

Concept application



...developed according commonly used educational approaches...



COSMOS Scenarios Templates

Name



Guided Research Model



Inquiry Based Teaching



Project Based Learning



The 5E Instructional Model



The Learning Cycle



ICT Cross Culture Awareness Learning



...Organized in meaningful activities...



...Tested in Real Environments



Tools and Data Repositories, Educational Portals and Content Aggregators



Tools Repository Discovery Space





[Home](#) > [Go Observing](#)

GO OBSERVING

There are two ways of observing the sky. Advanced and experienced users can remotely operate a telescope in real time. All the others can submit their requests, which will be scheduled for the oncoming nights.

Select your way of observing

• **Submit your scheduled requests**

Submit your observational requests in four steps: Select a telescope, select an astronomical object, check the weather and fill in the details like date, filters, duration, etc, [click here to continue](#).

• **Remotely operate a telescope in real time**

You can operate Skinakas telescope in real time by giving the coordinates of the object you wish to shoot, and the telescope immediately starts moving to fulfil your request. To become an authorized user, **download and fill-in the application form**. Send your CV and the application form to the **Scientific Committee** of D-Space. If you are selected, the Scientific Committee will contact you in order to give you the username and password for a specific date. If you are already authorized, .

LOG IN
SUBSCRIBE

ABOUT

TELESCOPES

RESOURCE
CENTER

FORUM

GO
OBSERVING

HELP





INTERNATIONAL YEAR OF
ASTRONOMY 2009

Home > Go Observing

 CHOOSE TELESCOPE



☒ Liverpool telescope



☐ Skinakas telescope



SGAO telescope



EA telescope

NEXT >>

Available Telescopes

YOU ARE
LOGGED
IN!

ABOUT

TELESCOPES

RESOURCE
CENTER

FORUM

GO
OBSERVING

HELP



? SELECT OBJECT

Select the astronomical object you would like to observe. It is important to take into account all the conditions described in the relative form and the sky map of the selected telescope.

View the Sky map

Select the astronomical object you would like to observe, from the object list by clicking the +

Using Catalogue Name

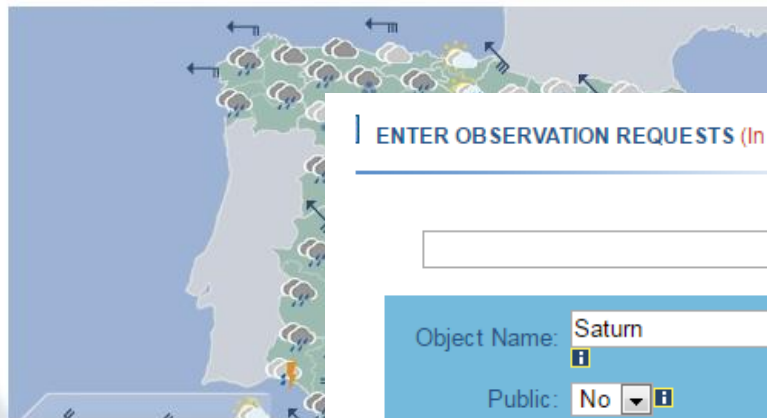
Object Name: Saturn



? SEE WEATHER

Weather in Spain

Elaborado el 11/02/2017. Válido para el 12/02/2017 de 12 a 24 horas



ENTER OBSERVATION REQUESTS (In order to proceed you have to be a registered

(Include the title of your request/proje

Object Name: Saturn

Public: No

Date:

Start Time: [HH : MM]

HH: MM

Local Hour Angle

Repeat Count: 1

Delay: 00:30 minutes

Filter(s) and Duration

Blue:

Visual:

Red:

Infrared:

Ultra-violet:

Narrow:

H-Alpha:



Observations

INTERNATIONAL YEAR OF ASTRONOMY 2009

Home > Resource Center > Library

My D-Space

The Sun

- Sun as a star (3) [view](#)
- Solar Rotation (3) [view](#)

Planets and Moons

- Characteristics of a Planet (30) [view](#)
- The Characteristics of the Surface of the Moon (44) [view](#)

Asteroids

- Characteristics of Asteroids (1) [view](#)
- Rotation of Asteroids (1) [view](#)

Birth and Death of Stars

- Birth of Stars (10) [view](#)
- Death of Stars (8) [view](#)

Galaxies

- Characteristics of Normal Galaxies (58) [view](#)

* To view the fits files:
 Right Click - Save Target As... (Internet Explorer)
 Right Click - Save Link As... (Mozilla, Firefox)
 (Open fits files with "Avis fits viewer" program)

SCENARIOS OF USE TRAINING LIBRARY

YOU ARE LOGGED IN!

ABOUT

TELESCOPES

RESOURCE CENTER

FORUM

GO OBSERVING

HELP

HOSTING 100 HOURS OF ASTRONOMY

Home > Resource Center > Library

My D-Space

The Sun / Solar Rotation



- Object name: Sun
- Date: 20/12/2003
- Telescope: Eudoxos
- Download data file(s):
 - W3035300-16a.fts
 - W3000500-16b.fts
 - W3000600-16c.fts

Data Uploaded by Students and available for downloading.

YOU ARE LOGGED IN!

ABOUT

TELESCOPES


RESOURCE CENTER

FORUM

GO OBSERVING

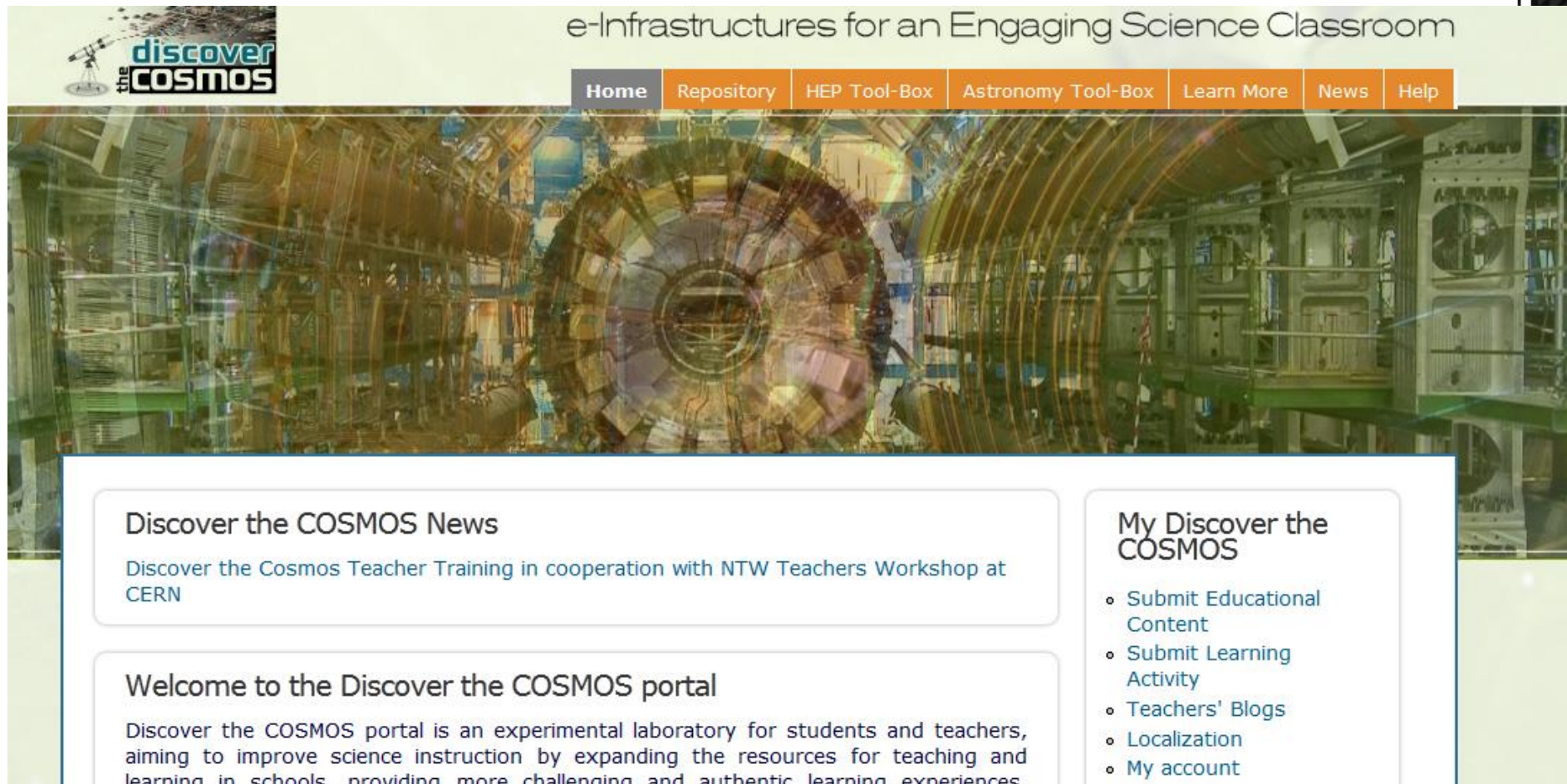
HELP

Object Name	Title	Telescope	Status
Saturn	Saturn JH Liverpool2	Liverpool	cancelled
Saturn	Acle High School Observations 0001	Liverpool	cancelled
Saturn	Saturn	SGAO	cancelled
Mars	danko_mars	SGAO	cancelled
Mars	Mars	SGAO	cancelled
Venus	a picture of Venus	SGAO	cancelled
Mars	Space observation	SGAO	cancelled
Jupiter	Kay n2	Liverpool	O.K.
saturn	Saturn rings	Skinakas	O.K.
Saturn	Saturn rings	Liverpool	O.K.
Jupiter	Jupiter -Visual	Skinakas	O.K.
Saturn	Saturn	Liverpool	O.K.
		Liverpool	O.K.
		Liverpool	O.K.
		Liverpool	O.K.
		Liverpool	O.K.
		Liverpool	O.K.



Educational Portal

Discover the COSMOS



discover the COSMOS

e-Infrastructures for an Engaging Science Classroom

Home Repository HEP Tool-Box Astronomy Tool-Box Learn More News Help

Discover the COSMOS News

Discover the Cosmos Teacher Training in cooperation with NTW Teachers Workshop at CERN

Welcome to the Discover the COSMOS portal

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

My Discover the COSMOS

- Submit Educational Content
- Submit Learning Activity
- Teachers' Blogs
- Localization
- My account



Home

Repository

HEP Tool-Box

Astronomy Tool-Box

Learn More

News

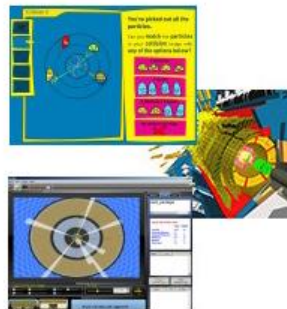
Help

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)

Share your Content

Upload Educational
Content



Upload Learning
Activities



629 educational scenarios

92709 educational resources

<http://portal.discoverthecosmos.eu>

Content Aggregator

Open Discovery Space



Emmanuel Chaniotakis Logout

linkup, create, share, grow

Learn more about ODS

Supports teachers in creating unique teaching resources, share them within communities of interest and grow in their professional life

Search for educational resources...



CREATIONS
Summer school
2017

"CREATIONS Summer School
2017 - Developing an
engaging classroom" The

<http://portal.opendiscoveryspace.eu>



819021 RESOURCES	1220 COMMUNITIES	2590 SCHOOLS	11920 TEACHERS	165 ACTIVITIES
▶ 🔊 📺 ⬇	▶ 🔊 📺 ⬇	▶ 🔊 📺 ⬇	▶ 🔊 📺 ⬇	▶ 🔊 📺 ⬇
ODS Main	ODS for Teachers	ODS for Students	ODS Academies	ODS Interviews

NEWS



40 high school students...

Friday, July 22, 2016

Following a successful Inspiring Science Education Summer...

Last places available...

Monday, June 20, 2016

A small number of places are still...

ISE Webinar: Light...

Monday, June 20, 2016

Title: Light Pollution Scenario Date and time:...

COMMUNITY EVENTS



"When dinosaurs...

Friday, February 3, 2017

Starting this Friday 3rd of February and for the...

First meeting of the...

Wednesday, March 1, 2017

The first meeting of our Action Research...

CMS Virtual Visit

Monday, March 6, 2017

We are happy to announce that we will be hosting...



Search Mechanisms



Search Mechanism: Discover the COSMOS

Searching Educational Content with

The screenshot shows the COSMOS search interface. At the top, a navigation bar includes links for Home, Repository, HEP Tool-Box, Astronomy Tool-Box, Learn More, News, and Help. The main search area is divided into three sections: 'Search the Repository' (circled in red), 'Search for Educational Content' (circled in purple), and a list of filters. The 'Search the Repository' section has a text input field and a 'Search' button. The 'Search for Educational Content' section has a 'Classification' dropdown menu (circled in purple) and an 'Add' button. Below this is a 'Selections' box that says 'Nothing has been selected yet.' To the left of the 'Selections' box are two filter lists: 'Language' (circled in green) with options de, el, en, es, fi, fr, pt, sv; and 'Age group' (circled in blue) with options 6-9, 9-12, 12-15, 15-18, 18-25, 25+. To the right of the 'Classification' dropdown is a list of scientific topics (circled in purple) including Astronomy, Atoms and molecules, Changing materials, Chemical reactions, Earth science, Electricity and magnetism, Elements, compounds and mixtures, Energy, Energy and nutrient transfer, Environment, Fields, Forces and motion, Green plants, High Energy Physics, Humans and other animals, Life processes, Light, Obtaining and using materials, Radioactivity, and <none>. Arrows point from the annotations to their respective labels: 'Language' (green arrow), 'Age group' (blue arrow), and 'Classification (Scientific)' (purple arrow). The right side of the interface features three sections: 'Top Rated Educational Content' with links to EUDOXOS, History of Sun, We Choose th, and A 'Moving' Jup; 'Most Recent B S' with links to Solar System s, Planning and R, Astronomical O, Venus phase 2, and Does the size; and 'Most popular' with links to A Young Pula and moCern (Mobil).

Search the Repository

Key-word

Search

Search for Educational Content

Classification

<none>

Add

Selections

Nothing has been selected yet.

Language

Age group

Classification (Scientific)

Top Rated Educational Content

- EUDOXOS: Teaching Astronomy with a Robotic Telescope
- History of Sun
- We Choose th
- A 'Moving' Jup

Most Recent B S

- Solar System s
- Planning and R
- Astronomical O
- Venus phase 2
- Does the size

Most popular

- A Young Pula
- moCern (Mobil

<none>

Astronomy

Atoms and molecules

Changing materials

Chemical reactions

Earth science

Electricity and magnetism

Elements, compounds and mixtures

Energy

Energy and nutrient transfer

Environment

Fields

Forces and motion

Green plants

High Energy Physics

Humans and other animals

Life processes

Light

Obtaining and using materials

Radioactivity

<none>

History of Sunspot Observations

Title

Navigation

Change/Modify/Delete

User Assessment

Original Title:

The history of Sunspots Observations

Keywords:

Sunspots, Solar Cycle

Keywords
(topic)

Description:

Sun observation data show that sunspots do not appear at random over the surface of the sun but are concentrated in two latitude bands on either side of the equator.

Average:

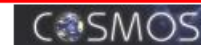


Average: 5 (3 votes)

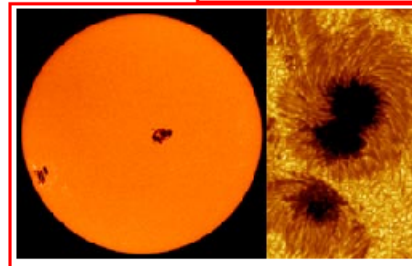
Your rating:



Certification



Preview



Resource

Material:

URL Address to educational material

[XML](#)

Full metadata record



IPRs

The license of the work **History of Sunspot Observations** by **COSMOS**
permits: reproduction, distribution, adaptation
requires: indication of the license governing the work, attribution and to share derivatives with the same license
prohibits: commercial use of the work

Contributor

69 reads

Visitors

Educational Level

Tags Classification: Sun, Sunspots, Solar activity Age Range: 15-18 Aggregation Level: Educational content Context: school education Difficulty: Easy Educational Asset Type: Narrative text Format: text/html Intended User Role: Teacher Interactivity Level: Low Interactivity Type: Active Learning Time: 0.25 didactic hour Metadata Language: en Purpose: Discipline Size: From 250KB to 500KB Structure: Networked Technical Name: netscape communicator Type:

Expected Duration

Metadata

Languages

Available in

- Български
- English
- Finnish
- Deutsch
- Ελληνικά
- Svenska

Community
Building Tools
Feedback




Authoring and Content Enrichment Tools



Creating and Uploading Educational Content:

The Inspiring Science Education Authoring Tool @ the ODS portal



Search educational resources of the Community

Create new educational resources in the Community

Step 1

Select Type of Resource

- ☐ Educational Object
- ☐ Lesson Plan
- ☒ Educational Scenario

Step 2





Select Tool

- ☒ ISE Authoring Tool



Step 3


Create New


5 phases of IBSE in educational Scenario

Hi User!ASSESSMENTSETTINGSHELP

LIGO AND THE QUEST FOR GRAVITATIONAL WAVES






LISTEN CONTENT

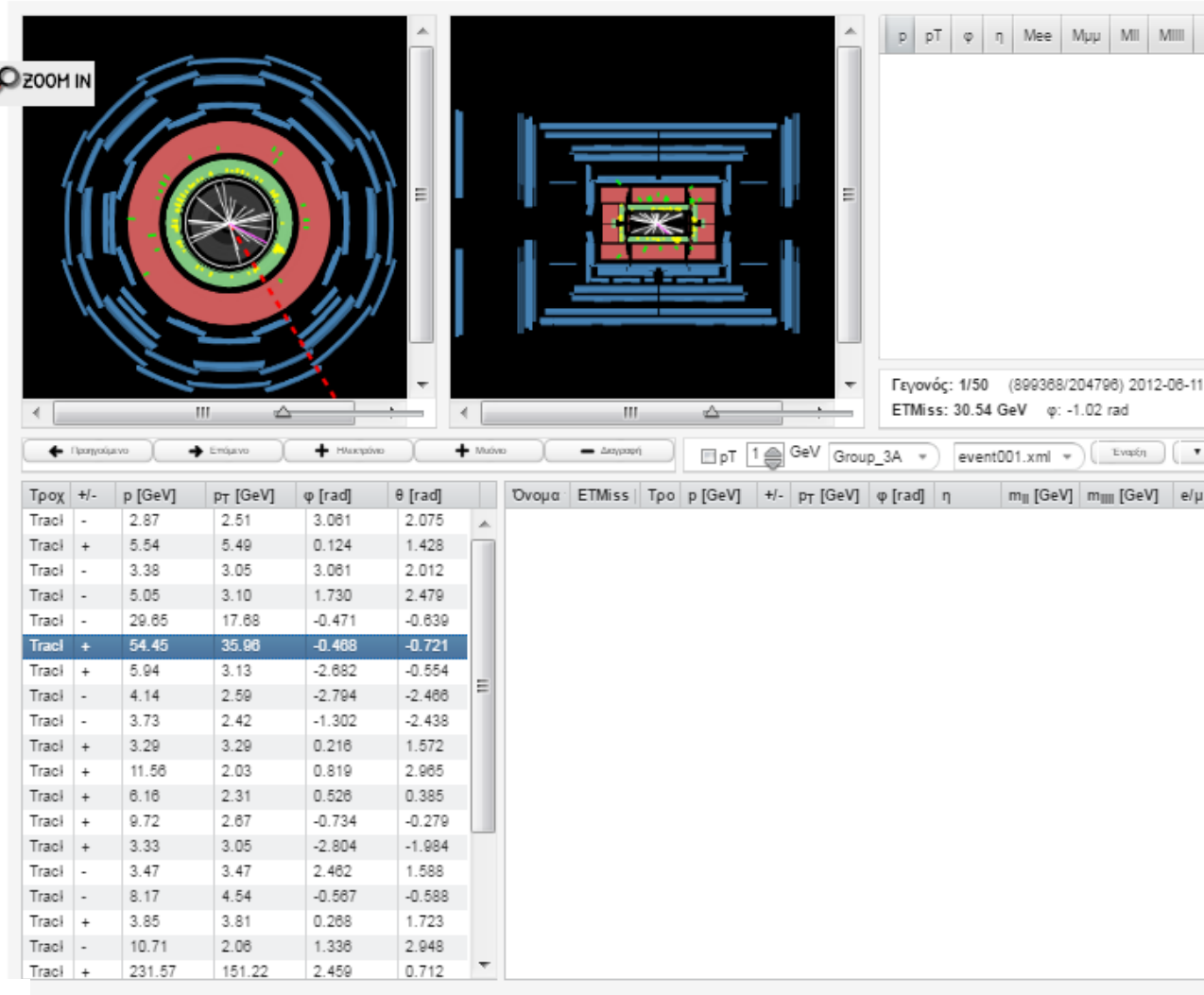
Orienting: Provide contact with the content and/or provoke curiosity

In February 11, 2016 a major scientific discovery was announced by the LIGO collaboration in USA. 100 years after the conception of Einstein's theory of General Relativity which describes the force of gravity in a new perspective, humankind comes to observe its greatest verification!

1.3 billion light years away, 2 gigantic black holes with masses almost 30 times the mass of the sun each travelling at speed close to the speed of light collided creating a cataclysmic cosmic event.



Embedding virtual e-science applications



Online assessment

Assessing Problem Solving Skills and Knowledge Items

Γεια σου echanio!

Αξιολόγηση
 ΡΥΘΜΙΣΕΙΣ
 ΒΟΗΘΕΙΑ

Ερωτήσεις Επίλυσης Προβλημάτων-Στατιστικά Δεδομένα σε Πραγματικό Χρόνο
 Γνωστικό Αντικείμενο-Στατιστικά Δεδομένα σε Πραγματικό Χρόνο

Αποτελέσματα Ερωτήσεων Επίλυσης Προβλημάτων (EETT)
 Αποτελέσματα Γνωστικού Αντικειμένου
 Μέσος Χρόνος Τάξης ανά Ώρα

Αριθμός Μαθητών που συμμετείχαν στο Μάθημα: 17
 Αριθμός Μαθητών που απάντησαν σε όλες τις Ερωτήσεις Επίλυσης Προβλημάτων: 12

ΕΞΑΓΩΓΗ ΔΕΔΟΜΕΝΩΝ
 ΑΝΑΝΕΩΣΗ

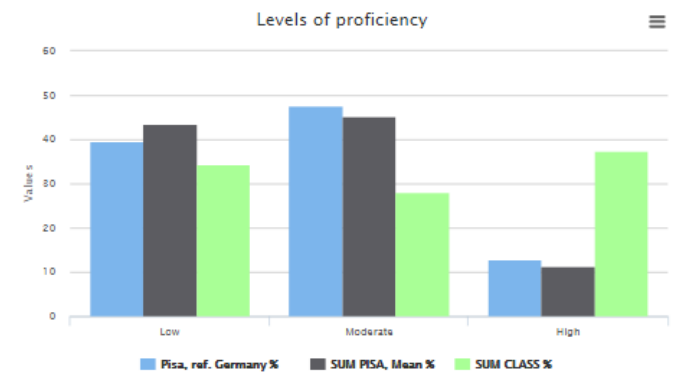
ΟΝΟΜΑ ΜΑΘΗΤΗ	ΧΑΜΗΛΟ	ΜΕΣΟ	ΥΨΗΛΟ
ΧΑΡΙΣ15	4	2	2
ΕΝΝΟΕΙΤΑΙ16	2	1	1
STUD3	3	2	3
ΗΑΝΟΣ15	2	2	4
ΚΟΥΚΟΣΑΡΧΟΛΑΚΗΣ15	2	3	3
ΜΙΧΑΛΗΣ 16	3	1	4

Ερωτήσεις Επίλυσης Προβλημάτων-Στατιστικά Δεδομένα σε Πραγματικό Χρόνο
 Γνωστικό Αντικείμενο-Στατιστικά Δεδομένα σε Πραγματικό Χρόνο

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 Αποτελέσματα Γνωστικού Αντικειμένου
 Μέσος Χρόνος Τάξης ανά Ώρα

Χώρες Αναφοράς του PISA
 GERMANY

ΑΝΑΝΕΩΣΗ



Community Support Environments



The Open Discovery Space Community Support Environment: More than 1200 online communities as of now

<http://portal.opendiscoveryspace.eu/communities>



Emmanuel Chaniotakis



English



Logout

linkup, create, share, grow

Resources Communities Schools People Academies News

Home | Communities

Search existing Communities

Create new Community

Search Communities by:

Title:

School:

Country:

Community Domain

Search

[Clear](#)



Example of a community: ISE community

inspiring SCIENCE education

// About Us // English

Resources Digital Tools Repository Communities Schools People Academies

Home | ISE community

ISE community

Domain: Science

This community will enable teachers, students and researchers involved in extended collaborative activities. It introduces them to the field of science through the use of resources and tools bringing together a network of educational communities, eLearning tools and resources and relevant partners of the field.

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.

Providing special authoring the delivering tools and services, the project aims to create opportunities for wide scale use of e-learning resources and inquiry based science education through the Inspiring Science Education Educational Design and Scenarios of Use.

Inspiring Science Education is all about providing the tools to make science education more challenging, more playful and above all more more imaginative and inspiring for today's students, the citizens of tomorrow's world

Here you can find the guidelines in how to use the ISE Authoring Tool

[Guidelines of ISE Authoring Tool](#)

Tags: Science, eLearning tools

Members: 2676

Discussions: 2

Polls: 0

Groups: 0

Activities: 2

Resources: 139

Events: 1

Blogs: 0

Managed By:

- Lamprini Kolovou
- Thanassis Perperis
- NUCLIO
- NUCLIO
- GTTP

Created on: 08.01.2014
Last visited: 12.02.2017

Network of related communities

f t g+ in @

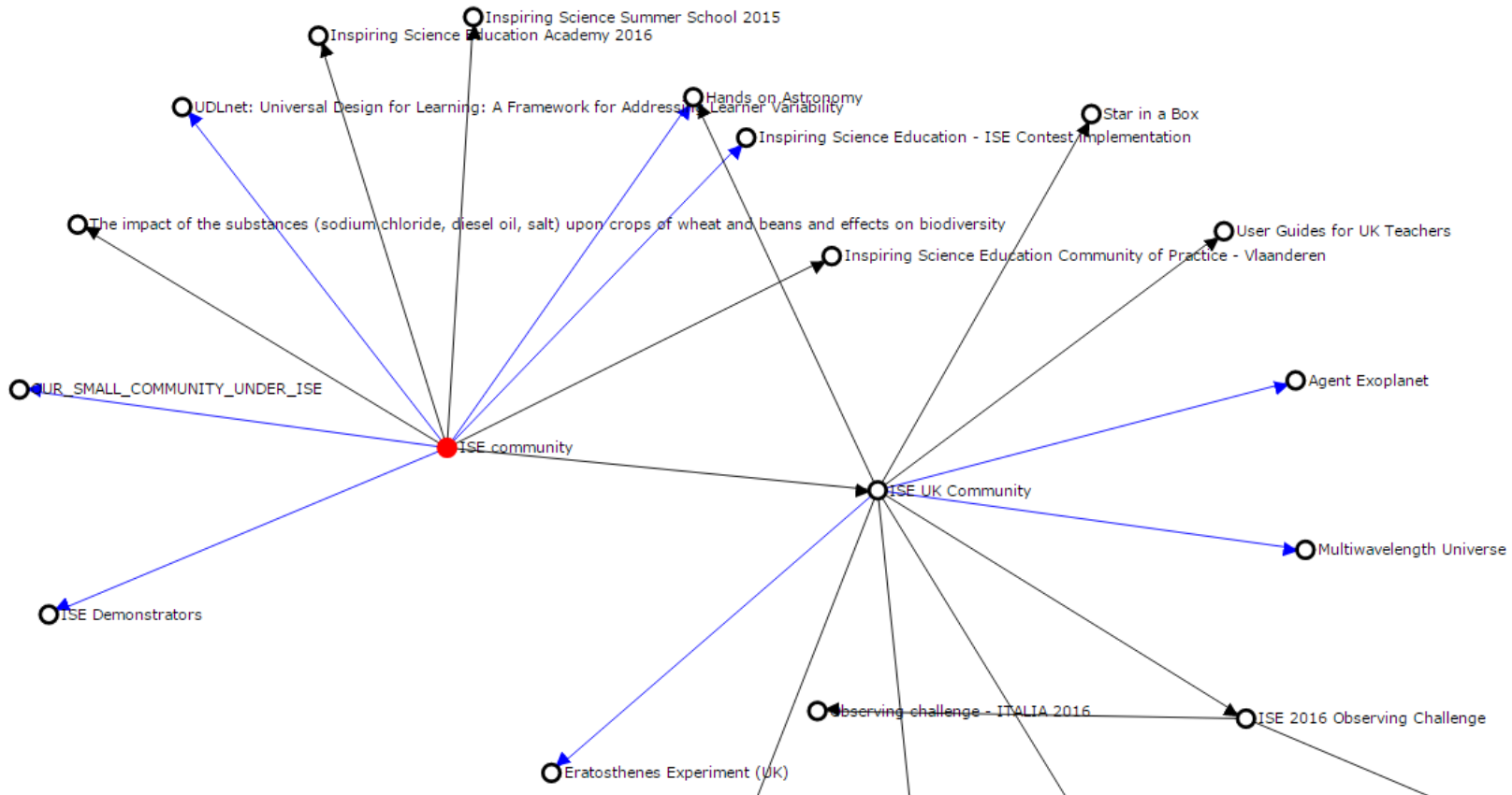
Community managers

Network of related communities

Nr of Resources

34

Communities can relate to each other: Network of Related Communities and Exchange of educational practices.



Users support



Training Academies



Teachers Academy

Welcome to Teachers Academy! This training framework is targeted to both non-technically oriented teachers as well as to IT-coordinators.

[read more +](#)

Welcome to the ODS Training Academies

Within the ODS Training Academies, we use the term “training” to refer to the acquisition of knowledge, skills, and competencies in the area of ICT and OER. In this context, references made to the field of professional development and to the field of professional learning should be understood as the perspective solutions to the practical problem of transferring knowledge from one part of the professional community to another part of the professional community. ODS training activities seek to organize, create, capture or distribute knowledge and ensure its availability for users. The ODS training program offers both live and online training and knowledge transfer opportunities.



teachers
academy



parents
academy



content providers
academy



technology developers
academy

inspiring SCIENCE

European science education academy

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[TRAINING EVENTS](#)

[NEWS](#)

[HOW TO APPLY](#)

[CONTACT](#)



The Mars mission



Creations



Let's go STEM



Go-Lab



Stories of tomorrow



Discover the Cosmos



ARK of Inquiry



CEYS

inspiring SCIENCE

European science education academy



ASTRONOMY ADVENTURES
IN CANARY ISLANDS



ESA - GTTP WORKSHOP



SCIENCE THROUGH
SPACE & TIME



BEYOND EARTH ORBIT

ESEA has published
the training courses
for 2017!

[Read more](#)

Register now!



INSPIRING SCIENCE
EDUCATION ACADEMY 2017

CHOOSE A COURSE

Find what interests you



Example: The Inspiring Science Education Academy

<http://portal.opendiscoveryspace.eu/topic-courses/inspiring-science-education-academy>

Home | Training Academies | Teachers Academy | Inspiring Science Education Academy

Inspiring Science Education Academy

Inspiring Science Education Academy

The aim of the Inspiring Science Education Academy is to support the modernisation of Science education and training, including in curricula, assessment of learning outcomes and the professional development of teachers and trainers, and to the wide adoption of the recommendations of the Rocard Report "A new Pedagogy for the Future". The introduction of the Inquiry Based approach in the science curriculum familiarized with a unique collection of open digital educational resources pedagogical practices, such as using real world learning activities, in order to design educational scenarios by repurposing existing eLearning materials with a broad range of curriculum areas, do not impose a fixed curriculum location and culture, as well as cross-disciplinary situations, being thus in line with the instruction. Teachers will also be trained to appropriately select and exploit their educational scenarios that suit their own needs in terms of planning their classroom and organizing the curriculum. This will further empower the classroom, as well as in multiple environments such as face-to-face, blended and comprehensive open learning networks approach that allows teachers to interact and collaborate is expected to enable all stakeholders to examine their own

European Science Education Academy



Choose an Academy

About Available Courses

Connecting Schools to Science Centres and Museums

Description:

Science museums and science centres are popular informal learning spaces. They play a prime role in public engagement in science enabling people to have first-hand experience of scientific phenomena and to develop curiosity, awe, motivation, interest to know more, understanding and learning. Science museums are also actively involved in school education providing a range of activities for pupils, offering resources and specialist support to teachers and organising training initiatives for school staff. In particular, school groups are among the audiences most present in the majority of museums as well as, in many cases, the priority of museum education services.

Training Activities: 15

School Based Inquiry Activities

Description:

The school constitutes the "epicentre" of formal comprehensive education. Most processes and educational models start there and revolve around the work carried out within its walls. Naturally, the same applies for activities involving the IBSE model, generally acknowledged as one of the most effective teaching approaches; the students start their acquaintance with inquiry-based learning at school, with the help of their teachers. Therefore, schoolbased work on the IBSE constitutes the cornerstone upon which any further activities can be built.

Training Activities: 16

Connecting Schools & Scientific Research

Description:

Research Centres are the places where "things happen" in Science. New observations are made, new ideas are proposed, new models are tested. Clearly, from the viewpoint of excitement, a Research Centre is the place to be: Research Centres play an increasing role in the advancement of knowledge and technology. Because of their ability to assemble a "critical mass" of people and investment, they contribute to national, regional and European economic development.

Universal Design for Learning

General Resources

- > User Profile
- > Create Community
- > Create Modules Inside Community
- > Join Community
- > Manage Community
- > Registration
- > Share Resources in Community
- > Badges

How to become an ODSE school PDF (3.4MB), PPTX (3.4MB)



ELLINOGERMANIKI AGOGI

Example of Teacher Training Activity: “Building a Cloud Chamber”

Title of Activity

Building a cloud chamber

★ Rate this

Competence Level for "Curriculum & Assessment": 3

Rate: ★ -/5

Description of Activity:

Summary:

Building a Cloud Chamber is a hands-on evidencebased experimental activity embedded in CERN's High School Teacher Programmes. Structured around the IBSE methodology, the ultimate aim of this activity is to raise student interest in the world of particle physics and its applications to fields that influence students' everyday life and well-being. It is designed to enable students to gain inquiry knowledge and skills through observation, collection and interpretation of experimental data, and reflection on experimental outcomes.

Aims:

Building a Cloud Chamber, at a general level, aims to serve as a springboard for exploring different ideas about particle physics based on a multidisciplinary approach. "What is matter made of?", "What does a particle mean?", "How can I visualise particles?", "What types of particle detectors have been developed and currently used by scientists at bigscience laboratories like CERN?", "Are there particle detectors developed for purposes other than basic research?" are some of the questions which this evidence-based activity is aimed to address in a playful, interactive and hands-on fashion towards generating and sustaining student interest in modern physics and science.

Training Material

building_a_cloud_chamber.pdf

Relative Activities

Search for Title

Apply filters

Title: Asteroid hunters

Title: COSMOS

Title: The "GeneLab" a gene and biotechnology outreach laboratory

Title: Chemistry Networking Science and Technology

Title: Quantum Spin-Off: How inquiry can lead to entrepreneurship

1 2 next > last >

Monitoring and Impact Assessment



Impact of the Community Building & Support Mechanism

- **10,029 STEM Teachers connected** through the ISE Community Portal;
 - **5000 Educational Scenarios created** by Teachers using the ISE Authoring Tool;
 - **Implemented in 5,091 Schools** across Europe;
- Average time of the Learning Experience was **01:20 hours**;
 - **11,062 students** participated in focused implementations with demonstrators enriched with PSQs.
 - **7,757 (or 69.6%) of Students answered all Problem Solving Questions (PSQs)** of a specific Educational Scenario;
 - Majority of Teachers believe that the **ISE Solutions** (i.e. IBSE Methodology, e-Learning Tools, Educational Scenarios) **have a high or very high Impact on their Teaching Practices and their Professional Development, on the Motivation of their Students and even on the School Curriculum for Science Education**;
 - **Very low Bounce Rates and high number of Returning Visitors** further indicate the suitability and acceptance of the ISE portfolio of educational offers.



ISE System Components – Sessions 2014 - 2016

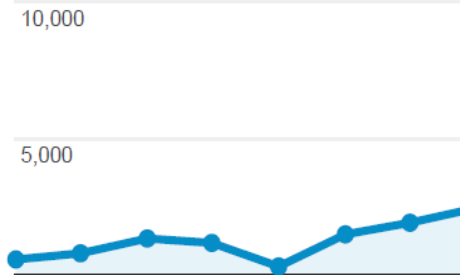
July 2014

January 2015
Results Per Country

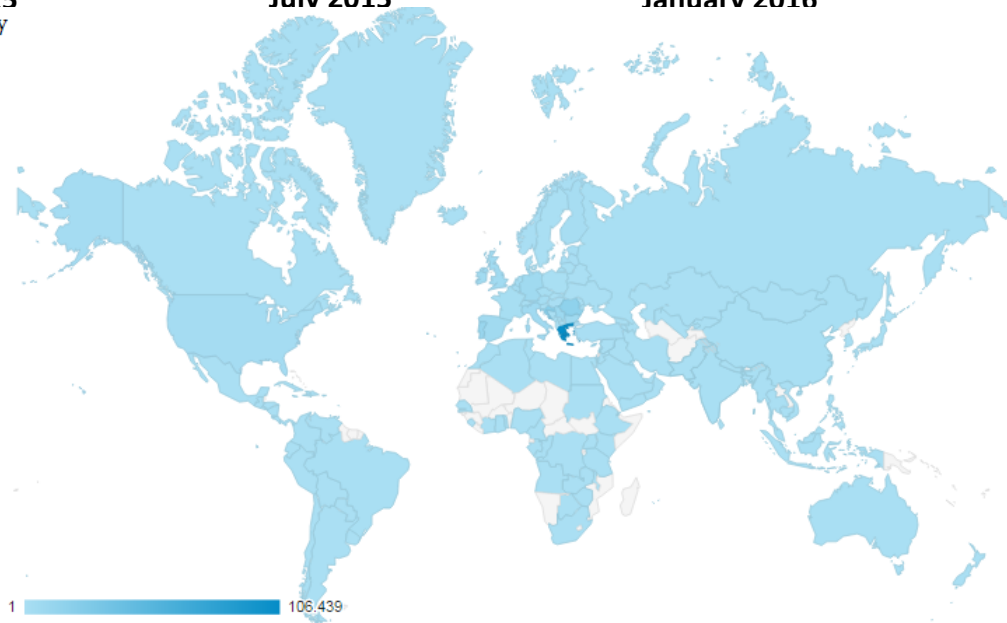
Julv 2015

January 2016

Julv 2016



ISE Community Portal

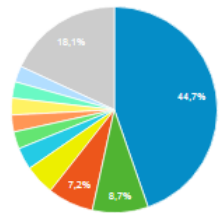


In each implementation
(on average)

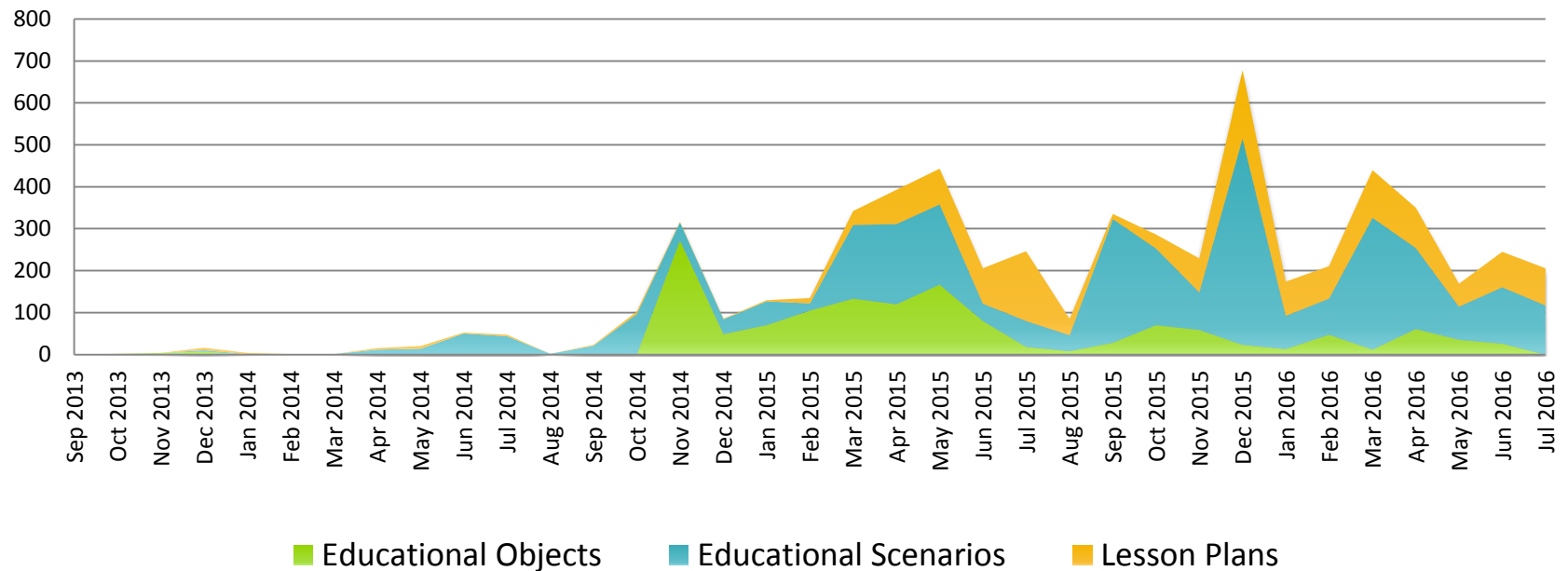
Δεύτερη ιδιότητα: Χώρα Πόλη Ηπειρος Υπο-ήπειρος

Δεύτερη ιδιότητα

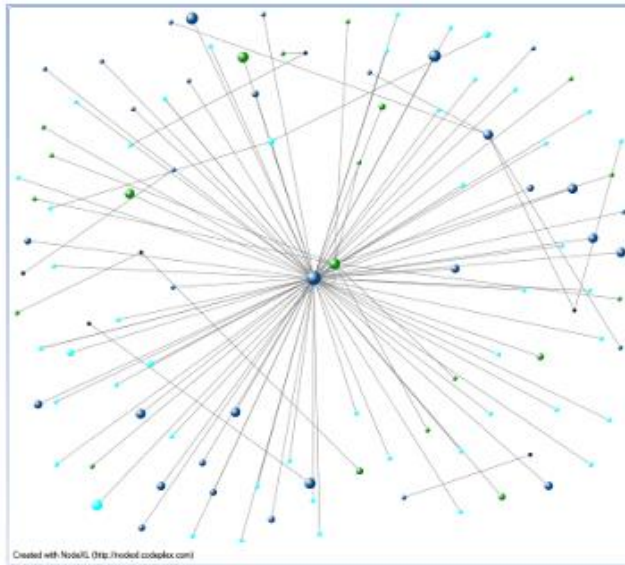
Χώρα	Περίοδος σύνδεσης	Περίοδος σύνδεσης	Συνεισφορά στο σύνολο: Περίοδος σύνδεσης
	238.206 % του συνόλου: 100,00% (238.206)	238.206 % του συνόλου: 100,00% (238.206)	
1. Greece	106.439	44,68%	
2. Croatia	20.836	8,75%	
3. Romania	17.177	7,21%	
4. Portugal	11.284	4,74%	
5. Serbia	8.205	3,44%	
6. Bulgaria	6.443	2,70%	
7. Germany	6.331	2,66%	
8. Cyprus	6.285	2,64%	



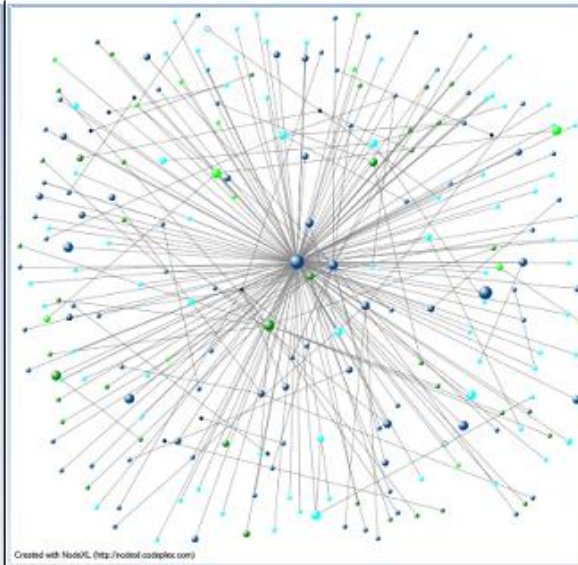
ISE Community Portal - User Generated Content



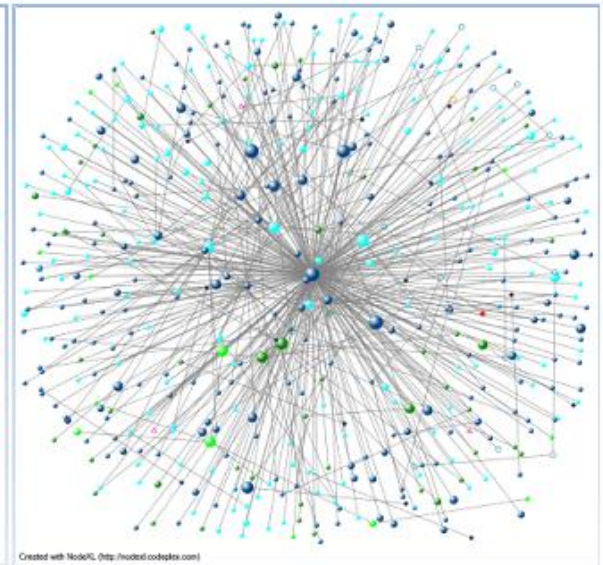
Community Nodes & Connections 2014 - 2016



Year 1

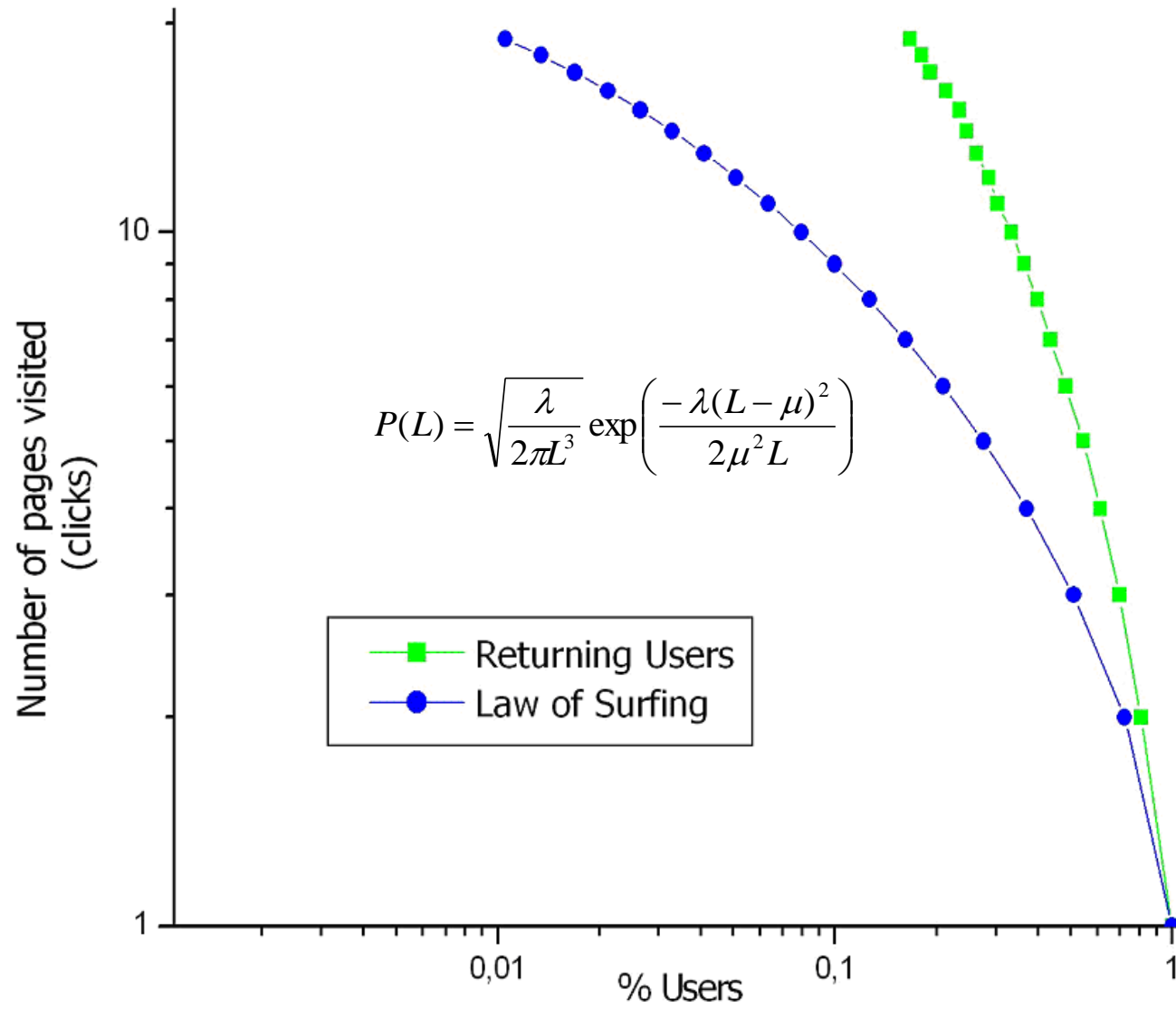


Year 2

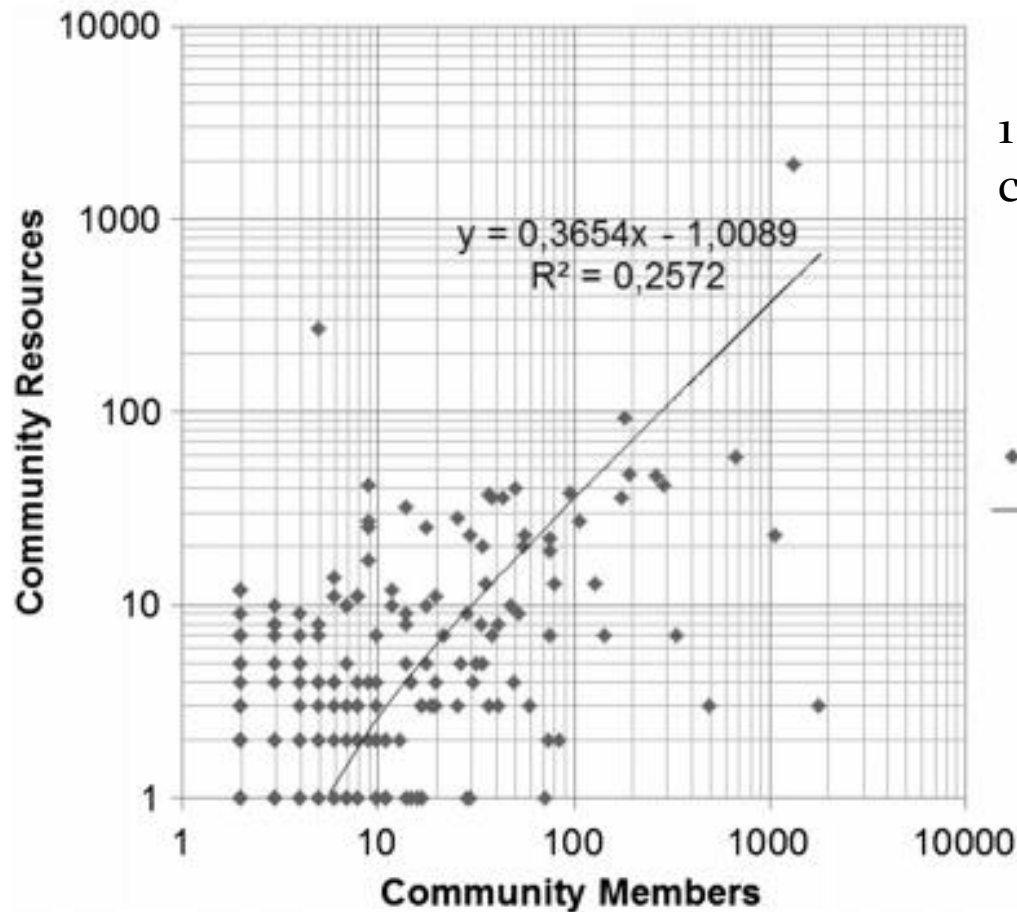


Year 3





Community Resources vs Number of Members



1 out of 3 users are becoming content contributors

◆ # Resources
— Linear (# Resources)

Image Credit:

S. Sotiriou, K. Riviou, S. Cherouvis, E. Chelioti, F. Bogner: "Introducing Large Scale Innovation in Schools"
J Sci Educ Technol (2016) 25:541-549



Conclusions



- Educational Portals can host and effectively facilitate the use of different experiments. Through their services, users can upload and download data, share educational content, search and use e-science applications of their interest.
- Effective search mechanisms allow users to find the resources, lesson plans and e-science applications of their interest efficiently.
- Educational Portals can host a community support environment for exchange of practices and content between users. A high number of Teachers consider the ODS online communities as a sufficient basis to exchange practices and use the portal's tools for sharing Open Educational Resources.



- The Concept of Training Academies for Teacher Professional Development has been thoroughly tested and proven to be successful.
- Portals provide coverage in different languages and provide connection with the social media, thus ensuring their high visibility and outreach potential.
- Portals can provide authoring tools with a solid metadata scheme in order for teachers to create their own IBSE based educational scenarios.
- A solid strategy for portal use validation has been operated and proven to be effective.

THANK YOU!

