

The Project of the Spanish Nuclear Industry Forum to Elaborate a Didactic Interactive Material on Radiological Protection

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S4.2 "Teaching Radiation Protection in Schools" Wednesday 16th May, 09:00-10:30



13 - 18 May 2012 ■ SECC ■ Glasgow ■ Scotland

Teaching Radiation Protection in Spanish Schools

Spanish Regulatory Body (CSN)



Spanish Nuclear Industry Forum



"@radiation"
 (12-18 years-old)



"Solve the X"
 (6-12 years-old)

Tuesday 15 May 2012

TS3b: RP System: Education and Training

10:15 Radiation And Radiological Protection. TS3b.6
 Guidelines For Primary And Secondary
 Schools. D Rueda Guerrero

The Spanish Nuclear Forum

- Non-profit Association funded in 1962
- Groups those companies working in the peaceful uses of nuclear energy (electricity production, medicine, industry,...)
- Main areas of activity: Communication, Publications and Documentation, Studies and technical support, Industry support, and....

Education and Training



Education and Training Activities

- Organization of courses, conferences and workshops on energy-related issues, for students and education professionals.
- Participation in debates and round tables.
- Collaboration in cultural weeks of schools.
- Collaborate with national and international educational organizations (Ministries of Education, Teacher Training Centres, etc.).
- Committee for Education and Training on Energy.
- Develops didactic materials “Educational corner” (www.rinconeducativo.org)





Actividades Primaria

Actividades ESO y Bach.

Experiencias

Visitas a instalaciones

Publicaciones

Murales

Noticias educativas

Colaboración Centros

Videos

▶ Envíanos tus noticias



Materiales didácticos

¡Porque la energía nos i

Inscríbete

Esta semana la dedicamos al agua.

■ ¡Animate a realizar estas actividades de Educación Primaria!

El agua	
	Icebergs flotantes
	Lluvia casera
	Molinos y turbinas
	Una depuradora casera

¡Ya somos más de 400 amigos en Facebook!



■ **¿Te lo vas a perder?** Te animamos a que nos sigas, podrás formar parte de este punto de encuentro para profesionales de la enseñanza, realizar tus comentarios, propuestas y opiniones, ser el primero en enterarte de distintos cursos y actividades que se puedan realizar ¡y mucho más!



▶ @Radiación



▶ Despeja la X



▶ Tablas periódicas



▶ Ponte al día en energía



“Educational Corner”

Catch up on Energy!

- ▶ Didactic Units on different types of energy.
- ▶ For teachers and students of Primary and Secondary Schools.
- ▶ Free access to a large number of resources (videos, articles, animations, photographs, etc.) on different types of energy.
- ▶ Links to websites of interest & Glossary of energy terms.

The “Book of Energy” (Primary Education)
First Prize for Innovative Education of the
 Generalitat Valenciana.

¡Ponte al día en energía!

Proyecto educativo dirigido a
Educación Primaria, Secundaria y Bachillerato
















Material del alumnado

Fichas sobre energía:

 Energía	 Biomasa
 Hidráulica	 Eólica
 Energía del mar	 Nuclear
 Solar	 Combustibles fósiles
 Geotérmica	 H ₂ Hidrógeno

Integrated Didactic Units (IDU) on “Ionising Radiation and Radiological Protection”



“Solve the X”

Primary & Secondary education
(6-12 years-old)



“@radiation”

Secondary education
(12-18 years-old)

Interactive, simple and easy to understand material, that would allow students to become familiar with ionising radiations and radiological protection

Integrated Didactic Units (IDU) on “Ionising Radiation and Radiological Protection”

What is the novelty of this material?

- Based in the framework of “**Key Competences for Lifelong Learning**”, proposed by the European Commission in 2007
- Key competences refer to the knowledge, skills and attitudes that serve for personal fulfilment and development, social inclusion and active citizenship, and employability.
- The Key Competences are described in the Spanish Education Law (LOE), and are mandatory for all Member States of the European Union.

Key Competences for Lifelong Learning

▶ The European Reference Framework sets out eight key competences:

- ▶ Communication in the mother tongue;
- ▶ Communication in foreign languages;
- ▶ Mathematical competence and basic competences in science and technology;
- ▶ Digital competence;
- ▶ Learning to learn;
- ▶ Social and civic competences;
- ▶ Sense of initiative and entrepreneurship;
- ▶ Cultural awareness and expression.



The key competences are all considered equally important, because each of them can contribute to a successful life in a knowledge society

Integrated Didactic Units (IDU) on “Ionising Radiation and Radiological Protection”

- The aim is that through a specific task, and related activities and exercises, students improve their knowledge on ionising radiation and radiological protection.
- Students will need to do research activities, critical thinking, problem-solving, self-evaluation, etc., to be able to solve the proposed task.



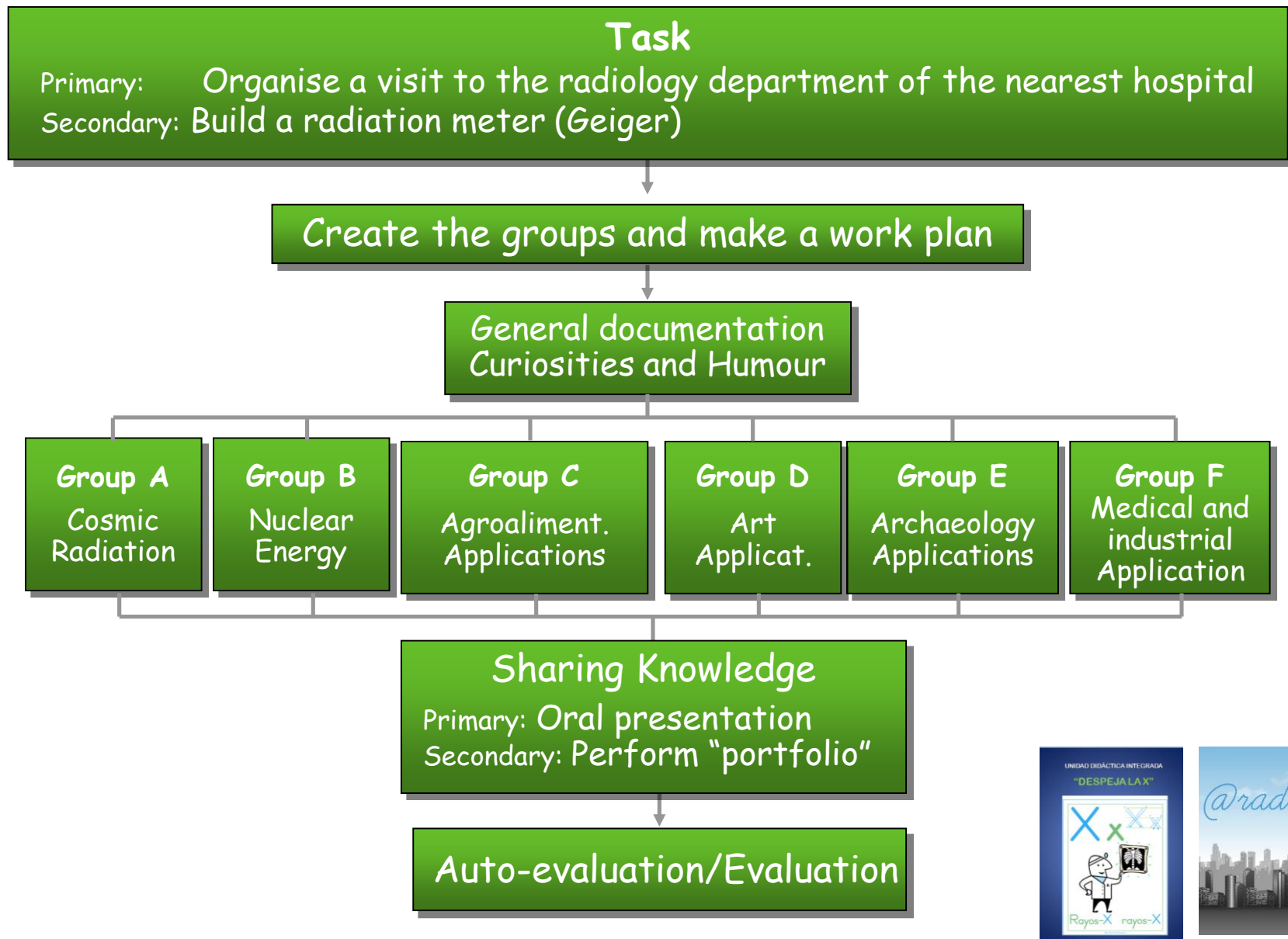
(6-12 años)

They will solve the task, and learn, while having fun!!

- IDUs also include information on a wide variety of topics related to ionising radiation, and links to websites that will help students to successfully complete the Task.
- IDUs include information for teachers: Explanatory text on key competences; Work plan to use the IDU; Didactic justification of the IDU; competences worked in each activity.



(12-18 años)



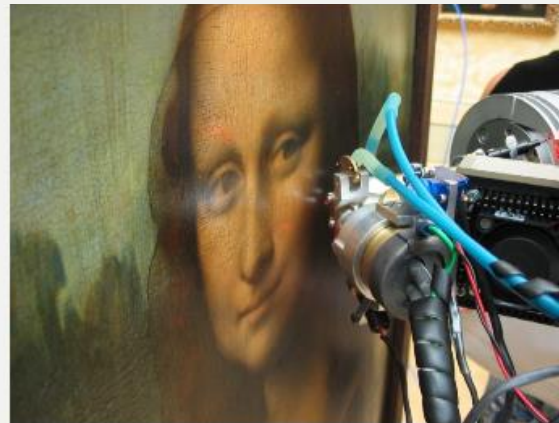
Use of Ionising Radiation in Research

OBRAS DE ARTE

 Read this article published in the Newspaper

"X-rays reveal secrets of Leonardo's Mona Lisa "

A pioneering study shows that Leonardo used up to 30 layers of translucent paint to set up a face.



"El análisis confirma que el artista tardó años en pintar cada cuadro..."



Exercises for "Leonardo da Vinci" Activity

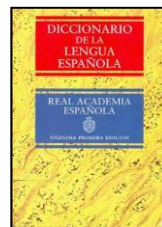
1. - Que deja pasar la luz, pero no se ven nítidamente las imágenes.
2. - ¿Cómo se denomina el movimiento cultural de los S. XVI y XVII en Europa, cuando se pintó esta obra?
3. - ¿Quién era Leonardo da Vinci?
4. - Al parecer hay muchas obras de Leonardo en el Museo del Louvre de París, ¿en qué país está esta ciudad y museo?
5. - ¿Cuántas obras se exponen aproximadamente en este museo?
6. - ¿Qué es el sincrotrón?
7. - ¿Qué se consigue con la técnica del sfumato (esfumado) en pintura?
8. - En esta investigación sobre La Gioconda, ¿qué se ha descubierto con las radiografías?

What is translucent?

Who was Leonardo da Vinci?

Apparently there are many works of Leonardo in the Louvre Museum in Paris, in what country is this city and museum?

In this research on the Mona Lisa, what has been discovered with X-rays?



Nuclear Energy

Urban Legends

Living near a Nuclear Power Plant does not increase the risk of cancer

- C. J. ORGAZMADRID. Un estudio del Consejo de Seguridad Nuclear (CSN) realizado conjuntamente con el Instituto de Salud Carlos III desterró ayer uno de los miedos más extendidos sobre las centrales





Exercises for "Urban Legends" Activity

The news mentions the "Nuclear Safety Council". Investigate the duties of this Council.

How can exposure to radiation be reduced?

- a) La distancia de la fuente radiactiva y el grado de contaminación por radiación guardan entre sí una relación negativa.
- b) El tiempo de exposición directa a la fuente radiactiva y el grado de contaminación por radiación guardan entre sí una relación negativa.
- c) El grado de blindaje interpuesto y el grado de detención de las radiaciones guardan entre sí una relación

3. Las declaraciones realizadas en la noticia pertenecen al director técnico de protección radiológica del CSN. ¿Qué tres conceptos serán básicos en esa área de trabajo?

Explain with your own words what is an epidemiological study.

4. Si tuvieras que representar gráficamente la función entre las siguientes variables: Distancia de la fuente radiactiva y grado de contaminación por radiación. ¿Cuál sería la variable dependiente?



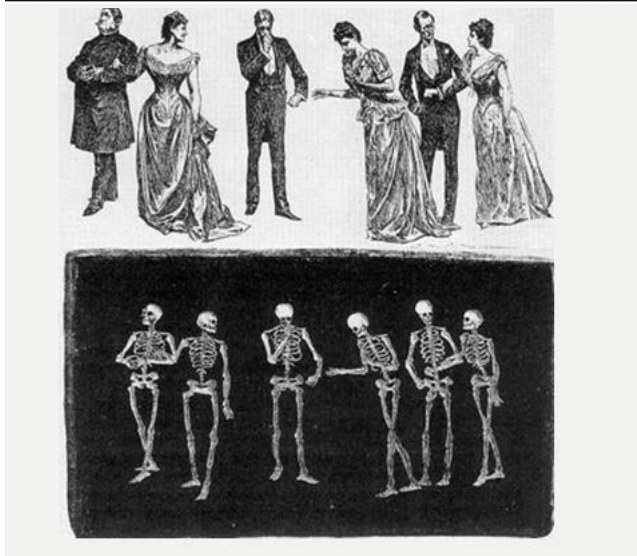
Make a table showing the following information for the Spanish nuclear power plants: name, city, region, owner, potency.

- a) La distancia.
- b) El grado de contaminación por radiación.



To make work more amusing, we also have a section on "Curiosities and Humor"

Joke in late 1800



Stamp collecting



Celebrities



HUMOR



CHISTE



COMECOCOS RX



HOMER RX



HOMER RX

Thank you for your attention

www.rinconeducativo.org