

Associació de professors i professors de física i química de Catalunya (APFQC)  
(Catalan Physics and Chemistry Teachers Association)

### **Report of WYP activities in secondary school and in primary school**

APFQC had proposed a collection of activities to be undertaken in Secondary School to celebrate 2005 as World Year of Physics, classified in the following three levels:

- A) ESO (Compulsory Secondary School) first year and second year (12-14),
- B) ESO (Compulsory Secondary School) third year and fourth year (14-16) and
- C) Batxillerat (Non Compulsory Secondary School) (16-18).

1. Replicating Eratosthenes experience in order to measure the Earth meridian. This activity is worked out between two schools placed in the same geographical longitude and, probably, in different countries. (A)
2. Measuring levels of temperature, sound, light and humidity with ITC technologie and comparing these with standard values. (B)
3. Plugging to the sun. The sun as the origin of earth energy, measuring its radiation increasing temperature of a sample of water in a sunny day, through ITC activity
4. How to improve the environmental conditions of our school.(B)
5. 1905 Remembrance Measuring  $h$  (Planck's constant) through photoelectric effect activity. (C)
6. Conferences, discussions and other activities about Einstein. (B) (C).
7. Exhibitions in different schools: Nobel prizes in physics, diverse models of pendulum, Einstein and his time, sun eclipse, equinox, solar eclipse, etc.
8. Guided visits to the international exhibition *La màgia dels superconductors*, the catalan version of *Superconductivity in everyday life*. This exhibition has come from Budapest, Jena, Caen, and, after three months in several places around Catalonia, it will move to Oxford.
9. Visits to CosmoCaixa and Museu de la Ciència i la Tècnica de Terrassa.
10. A day in a foreign science museum: Cité de l'Espace in Toulouse; Arts et métiers Le Palais de la Découverte, La Cité des Sciences, La Villette in Paris, CosmoCai: in Madrid, La Ciutat de les Arts i les Ciències in València.

#### **Development:**

From the very beginning we have decided to work hand to hand with the Departament d'Educació as the main educational institution in Catalonia. The collaboration has been highly positive and they had given us, both, physical and personal support. With the help its structure we can reach the whole education community and simplify our work.

A leaflet whereby we announced the basis of WYP and the proposal for secondary school in Catalonia was published. At the same time a web page gave the complete information and support to the interested people: activities, additional information, results box, etc. Detailed explanations how schools must proceed to develop experience, how to communicate results and report what students had done following a formulary, where in this page.

Four advisers - teachers who generously offered their time – were established to help teachers whenever they would encounter difficulties with the procedures or had practical concerns to resolve.

The Departament d'Educació has promoted other activities for Primary school as well as for Secondary school. In <http://xtec/cedc/fisica/fisica05> the explanation of the following proposals can be found:

Pendulum  
Inclined plain  
Bubbles  
Light and shadows  
Exploring tubs  
Light, mirrors and images  
Observation and trials  
Technology

Other short experiments for Secondary School were organized by the Departament d'Educació.

Each two weeks a new subject, as little scientific enigma, of the following list appeared:

1. An unbreakable glove
- 2 When will it be weightier?
- 3 A handkerchief ever dry
- 4 The tub that disappears
- 5 Forces on the Moon
- 6 The coin that reappears
- 7 Experiments of flotation with talcum powder
- 8 A puncture without explosion
- 9 A water watch
- 10 Floating in the Dead Sea
- 11 What temperature will be higher?
- 12 An electric pendulum
- 13 Ping pong balls recover their original shape
- 14 Atmospheric forces

Teachers in school or students at home could follow instructions and try to answer several questions.

CDEC, a Departament d'Educació institution, is a centre of experimental research and information for teachers, depending on Departament d'Educació. It organized too a Saturday morning in CosmoCaixa where two secondary school teachers did a show of the trials in physics.

WYP in figures

Exhibition *La màgia dels superconductors*: Over 10000 secondary school visitors.  
Activities APFQC: Had participated over 4500 students.

Some websites with WYP activities for secondary school in Catalonia:

<http://xtec.net/cdec/fisica/fisica05> is a catalan governmental web with some links to other sites.

<http://fisicaiquimica.org> is the APFQC web.

<http://superconductivity.hu/cat> is the catalan version of an European exhibition about superconductors and magnetic levitation. Its aim is to show to society, especially to young students, what superconductivity is and the importance of research in physics for technological development to occur.

<http://www.xtec.es/~iros1> . Seminari permanent de formadors de física i química has developed some WYP activities and a cultural tour along Paris science museums.

Activities of WYP in some schools and teachers websites

<http://iespeguera.xtec.es/internet/departaments/fisquim/activitats/index.htm#2>

<http://ies-eugenidors-lhospitalet.xtec.es:8081/amf2005/index.htm>

<http://www.xtec.es/centres/a8031812>

<http://www.xtec.net/ies-antoni-pous/proiectes/proiectes.htm>

<http://www.xtec.es/ceippractiques2-lleida/pendols.htm>

<http://www.xtec.es/~oplana>

<http://www.xtec.es/~acosiall> . Anicet Cosiàlls is a secondary school teacher who win both national and international prizes of *Physics on stage* and who win too the *Milset* prize, an international event created to approach science to young people.

<http://www.xtec.es/~mcalvet>

<http://www.xtec.es/~rmelia>

#### **Coordinators:**

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