

The Future of Science and Technology in Europe
Promoting and Attracting Human Resources in S&T



AGÊNCIA NACIONAL
PARA A CULTURA
CIENTÍFICA E TECNOLÓGICA

A Portuguese initiative for
scientific and technological culture



Lisbon, October 2007

www.cienciaviva.pt

How can we promote and attract Human Resources in S&T?

- **Putting science in the schools** *Focusing our attention on the schools*
- **Putting science in society** *Focusing our attention on the public at large*

Ciência Viva activities



CIÊNCIA VIVA IN SCHOOLS
Science Education, practical work



**NATIONAL SCIENTIFIC AWARENESS
CAMPAIGNS**
Conferences, exhibitions, scientific film
festivals...



CIÊNCIA VIVA CENTRES
A national network of interactive science
centres

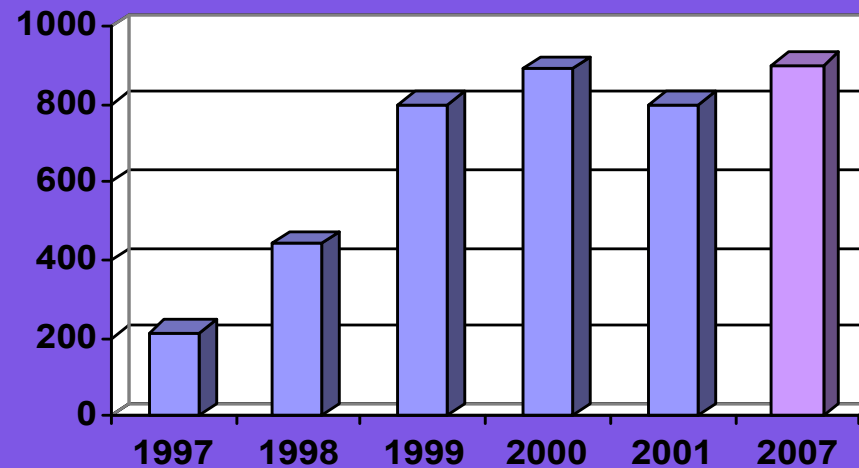
Science education projects

Promoting practical work



Partnerships:

- Research institutions
- Scientific associations
- Local authorities



Science in Summer



Astronomy

Biology

Geology

Lighthouses

Engineering

Astronomical observations

Field trips - cliffs, urban geology, quarries, mining facilities, beaches, estuaries

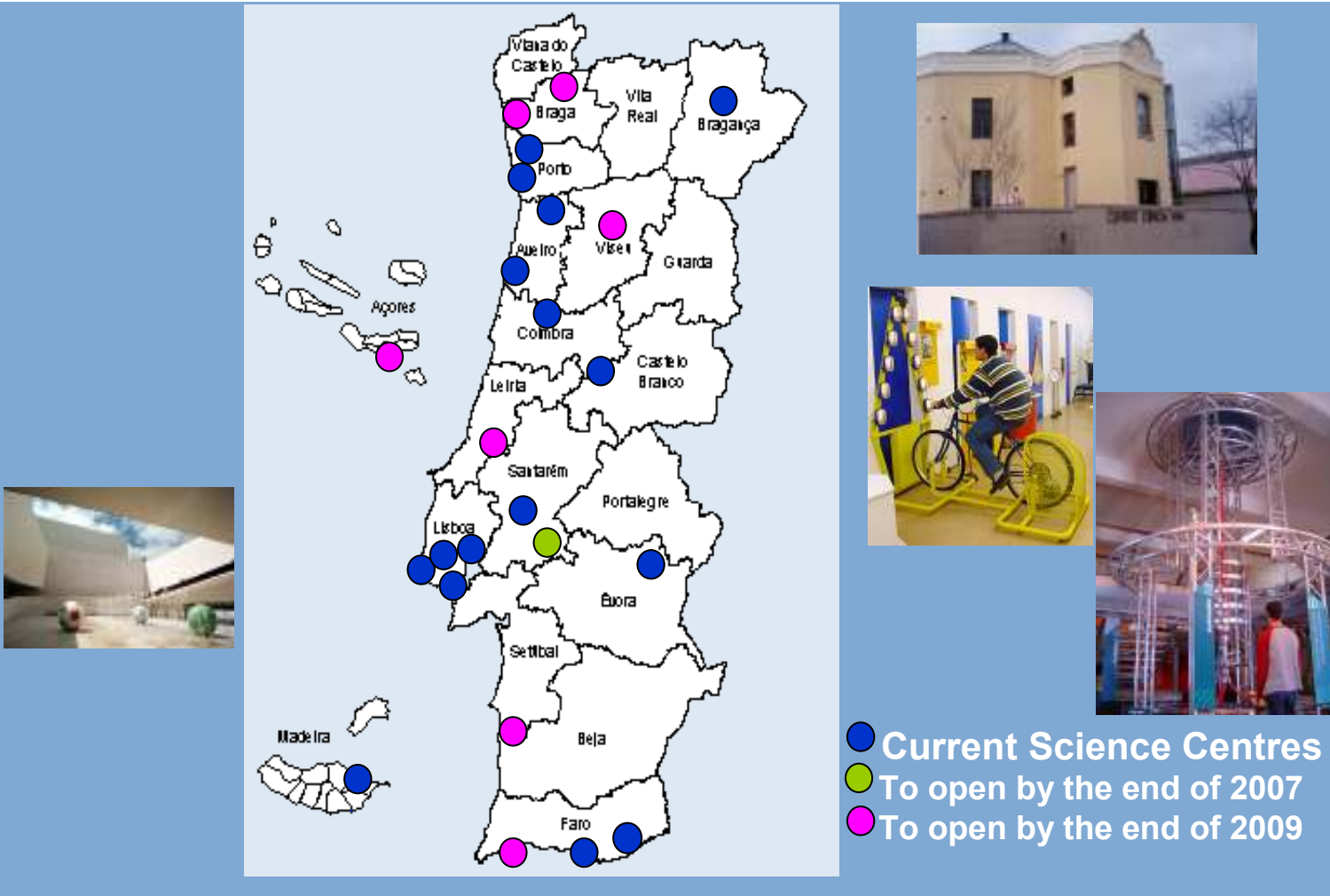
Navigation, optics, Physics

Engineering facilities

Dams, bridges, antennas, factories

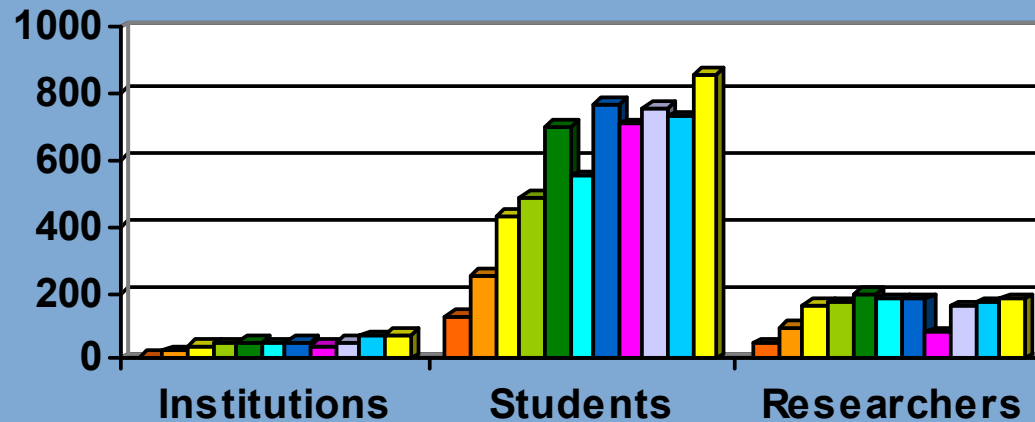


NETWORK OF CIÊNCIA VIVA SCIENCE CENTRES



Summer Science Internships

A programme for secondary school students



Summer Science Internships

A programme for secondary school students



After all they are like us!

In Público (national daily newspaper), 4th August 1997



Lisbon, October 2007

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Summer Science Internships

A programme for secondary school

Students' comments...

I enjoyed this experience very much, because it helped me deciding what do in my future.
Manuel, 17 years old

The vision we have of science, this is, what we imagine science to be, changes completely once we know how it works.
Maria, 16 years old



Summer Science Internships

A programme for secondary school students

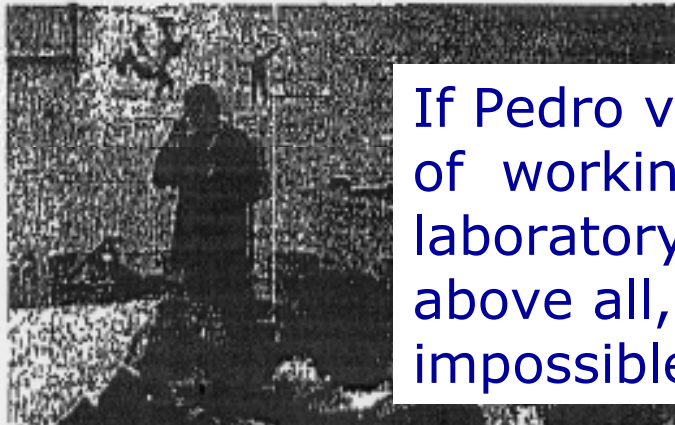
INICIATIVA

«Ciência Viva» para aspirantes a investigadores

Apresentação de projecto reuniu participantes. Enriquecimento pessoal e confirmação de vocações são parcelas do balanço

FILOMENA NAVES

O Pedro, de Torres Vedras, nasceu com uma doença, a psoríase, e dar o seu testemunho pessoal, ainda que com nome fictício, foi o seu contributo mais visível para o projecto Ciência Viva em que participou na escola. A Ana é de Évora e está muito virada para a literatura. Agora escreve e sabe que a gente gosta de uma boa história. Por isso deu a ideia de se chamar a uma para falar da genética. O Rodolfo viveu



fo, todos alunos do secundário de diferentes escolas do país, participaram no projecto. O Pedro, de Torres Vedras, nasceu com uma doença, a psoríase, e dar o seu testemunho pessoal, ainda que com nome fictício, foi o seu contributo mais visível para o projecto Ciência Viva em que participou na escola. A Ana é de Évora e está muito virada para a literatura. Agora escreve e sabe que a gente gosta de uma boa história. Por isso deu a ideia de se chamar a uma para falar da genética. O Rodolfo viveu

If Pedro vaguely dreamt of working one day in a laboratory, he reinforced the idea and, above all, realised that it was not impossible.

Rodolfo experienced with pleasure the extra-curriculum working hours that put him in contact with the scientists in the laboratory .

tou a sorte. O mais enriquecedor e que a investigadora respondeu.

pera que haja emprego para ele. O Rodolfo confirmou apenas um

Para Jorge Sequeros, investigador em genética humana, «receber estes jovens, além de abrir janelas nas nossas redomas, mostra-nos as nossas próprias deficiências». E explica: «Para falar de ciência a quem não está muito familiarizado com ela é preciso saber muito.»

No final, o especialista em genética forense Francisco Corte-Real fez exactamente isso: explicou de forma cristalina, algo que é

In Diário de Notícias (national daily newspaper), 22nd November 2001

School Science?

“The blast furnace, so when are you going to use a blast furnace? I mean, why do you need to know about it? You’re not going to come across it ever. I mean look at the technology today, we’ve gone onto cloning, I mean it’s a bit away off from the blast furnace now, so why do you need to know it?” [16 year old pupil]

*Reduce the gap between **science-as-it-is-taught** and **science-as-it-is perceived**.*

Policies - Some examples of policy measures and initiatives:

To organize initiatives directly involving scientists with the youngsters (role models)

To get youngsters in touch with modern science and technology

To improve the perception of S&T as an open activity

To use S&T to foster social inclusion

To promote youth entrepreneurship awareness

To promote the inclusion of S&T topics positively in fiction: movies, theatre, soap operas, books, and comics

Curriculum must be more *prospective*
and less *retrospective*



The Most Important Scientific Discoveries

(Teachers n=118)

	%
DNA	27
Splitting the At	21
Microchip	21
Space	19
Penicillin	18
Plastics/Polymers	15
Genetic Engineering	14
Computers	13

(Students: n=1018)

	%
Personal Computers	39
TV	24
Laser Technology	23
Space/Science Fiction	17
Video	16
Telephone	14
Motor Cars	7

Source: Jonathan Osborne, King's College

Current issues in Science Education

Science education must account for 3 issues:

1. An adequate basic training in science, which presently is too dogmatic, authoritarian and rhetoric
2. Link basic science facts and concepts to applied science and contemporary issues
3. Establish strong interrelationships between science, technology and society