High School Teachers Programme
2010
Inspiring the next generation of scientists

Mick Storr
Head CERN Teacher Programmes
and
Visits Service
CERN Strategic Missions

• Fundamental research
  – Where do we come from?
  – What are we made of?
  – Where are we going?

• Education - Training the scientists of tomorrow
  – Inspiring young people to study science

• Technology Transfer
  – Sharing knowledge and skills

• International Collaboration
  – Working together with a common objective
CERN has a broad range of communication activities

> 800 media visits per year (TV, newspapers, radio)

Visitor programme (40,000 visitors/year)

Permanent and temporary exhibitions (Microcosm, soon ‘Globe’)

Open day (2004: 30,000 visitors, 2008: > 50,000 visitors)

Public webpages

Live webcasts
Education Activities

Academic Training Programme

CERN teacher courses

Creation and provision of teaching resources

Video-“Chats”: virtual meetings between CERN scientists and school classes

Web-Lectures (teacher courses, colloquia, seminars, etc)

Visitor programme (50,000 visitors/year - 50 % schools)
Objective of Teacher Programmes
To bring modern research closer to schools

OLD

NEW

Research  University  School Teacher  Students
Looking for multiplicative factors

CERN July 2010

High School Teachers Programme
What are we trying to achieve with the help of physics teachers?

1: RAISE AND MAINTAIN THE INTEREST OF STUDENTS IN MODERN SCIENCE

Motivate them to continue scientific education at school
Help them to better understand the physical world

Improve scientific literacy

2: INSTIL A FEELING OF MYSTERY AND DISCOVERY POTENTIAL

Motivate students to take up physics at universities

Prepare the future generation of physicists

SCIENCE IS ALIVE!
How researchers view science
How school students view science

Science teaching climbing wall

1/2 mv^2

m g h

What am I doing here?
Take students on a sight-seeing tour...

The origin of...

- Universe
- Black Holes
- Dark Matter
- Dark Energy
- Antimatter
- Particles

Link modern physics to school curriculum

CERN July 2010
High School Teachers Programme
Residential Teacher Programmes

Basic content

• Lectures
  – Introductions to CERN, Particle Physics, Cosmology, the LHC Experiments, Particle Accelerators, Medical Applications of Particle Physics, and the GRID

• Visits to experimental facilities

• Hands-on activities

• Working group activities

• Opportunities to meet working research physicists in a variety of informal settings.

All lectures are recorded, web archived and made publicly available
3 - week Summer School

30-40 participants, mainly from member states - held in English

**Fully funded** by CERN (travel, accommodation, food, lectures)

**Lectures:** Particle physics, cosmology, accelerators, detectors

**Seminars:** Antimatter, medical applications, ...

**Working Groups:** Bubble chambers, teacher lab, stories, ...

**Guided Tours:** LHC experiments, Antimatter factory

**Social events** - networking - Alumni contacts

4 – 24 July 2010
3-day weekend programme

≤ 50 participants (mainly member states)

In English

Partially funded by CERN (accommodation)

 Lectures on:
particle physics and cosmology
accelerators and detectors
antimatter, medical applications

Guided tours:
LHC experiments
Antimatter Factory
1-Week Programmes

30 - 50 participants (from same country or language group)

In the language of the participants

No course fee, but external funding for travel, accommodation, subsistence

Goal: 20+ programmes per year

In collaboration with teachers and scientists from member states

Funding: teacher education funds, ministries, local authorities, foundations
NTP Programme Organisation

Collaboration

CERN education group + for each country:

CERN National Organiser scientist from the country resident at CERN

National coordinator(s) e.g. teacher, administrator resident in the country

National agencies, foundations to assist with funding
Outcome

• Newly inspired, motivated and confident teachers
• Inspire and motivate students
• Communicate with their colleagues
• Communicate with the general public
• Act as ambassadors for science, physics, particle physics, CERN

Excellent examples among the many teachers who have attended our programmes
Arthur C. Clarke
Author of 2001 : A Space Odyssey

• “When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.”

• “The only way of discovering the limits of the possible is to venture a little way past them into the impossible.”

• “Any sufficiently advanced technology is indistinguishable from magic.”

Our goal, with the help of teachers, is to bring a little of the magic of CERN into the classroom
Thank You

- The sponsors
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- CERN Physicists
  - Lecturers, guides, demonstrators

- CERN colleagues
  - Rolf Landua
  - Maureen Prola-Tessaur
  - Christel Ranta
  - Sascha Schmeling

- Your schools
- YOU
  - Interest, enthusiasm, energy, and dedication to students

CERN is proud of its educational collaboration with teachers and schools throughout the world