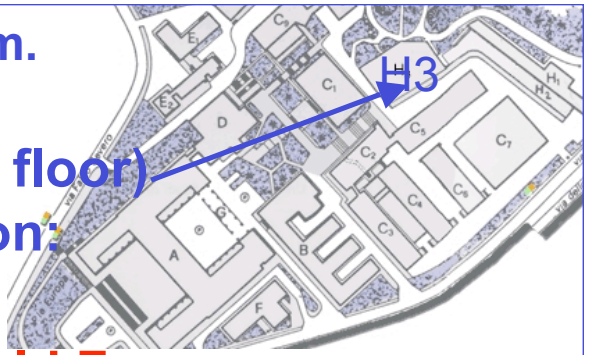
Monday 28 May 2007, 4.00- 6.00 p.m.
University of Trieste
Building H3, Lecture Room 1A (first floor)
Special International Presentation:



HIGHLIGHTS of the G8-UNESCO World Forum on 'Education, Research and Innovation: New Partnership for Sustainable Development', held in Trieste, May 2007

(In English) All students, researchers, lecturers are cordially invited

Program

16,00 Introduction: Education-Research-Innovation **- Gianrossano GIANNINI (TS/Italy)** (10')
16,10 Why UNESCO? Why Africa? Why Trieste?**- Paolo ALESSI (TS/Italy+UNESCO)** (10')
16,20 Education in the Knowledge-Based Society **- Gabriele GARBIN (TS/Italy+UNESCO)**(10')
16,30 Environment: Global Challenges **- Gianrossano GIANNINI (TS/Italy)** (10')
16,40 Innovation and Society **- Rachel OBED (Nigeria+ICTP)** (10')
16,50 Sustainable Development and Health **- Omer A. Ali (Sudan+ICTP)** (10')
17,00 Sustainable Development and Energy **- Gabriele GARBIN (TS/Italy+UNESCO)** (10')
& Anna Maria Novello (TS/Italy) (5')
17,15 Research and Innovation: Role of Governments**-Patrizia TIBERI VIPRAIO (UD/Italy))**(5')
& Rachel OBED (Nigeria+ICTP))(5')
17,25 Knowledge and Sustainable Development **Gianrossano GIANNINI (TS/Italy)** (10')
17,35 Science/Technology/Innovation: Perspectives for Africa**-Elie SIMO (Cameroon+ICTP)** (15')
17,50 Knowledge for Sustainable Development:The future **Patrizia TIBERI VIPRAIO(UD/Italy)**(10
18,00 End

Special session on research and innovation: the role of government

Patrizia Tiberi Vipraio
Università di Udine

Politics in general

Fabio Mussi:

Awareness of the need of bridging the gap between Science and Politics

Reasons for optimism:

R&D expenditure tripled in 15 years

Italian researchers ranked third in performance by a Survey but…

Lisbona development goals not met…

….More N/S cooperation

A developmental approach: South Africa

Mangena: democracy has brought innovation and innovative thinking

Selective policies in key sectors

Industry/University links

Tax incentives

Facilities & infrastructures

Start-up or Seed **policies**

The Foundation for Technological Innovation

Third component of ICGB

Biotechnology, Nanotechnology, ITC, Space science, Infectious diseaes

Research Chairs from 55 in 2008 to 210 in 2010

Collaboration (TRIP) between students and industry for research: subsidize research for 2400 PhD students to work in industries p.y.

Claim 130% R&D and accelerated depreciation

Center for High Performance Computing: cutting edge research for key sectors above

Innovation Fund: addressing problems that impede development or don't allow the country to compete

Cooperation for high risk projects; SME's skill/ technology upgrading; target sectors (auto, food, electronics, metals, chemicals, molded plastic)

Science application to Health, Agriculture, Water and related fields….Need to tackle malaria

An institutional approach: the EU

Potocnik: how to support the creation of technology markets

Countries agendas

Intellectual property rights

European Institute of technology

Taxation

Regulation

Subsidies

Risk financing facility

Reforming the Institutions to better cope with coordination

Better coordination of tax incentives throughout EU

How to increase funding from Major Foundations

Campaign on Less and Better Regulation (some already dropped)

Financial support to R&D (55b€ in 7 years just one Program) on key sectors (nanotech, ICT, biotech) and factors (health, environment, energy)

Problem of knowledge loss (not created, not appropriated)

Little difference between USA and EU in basic knowledge financing and production; much difference in knowledge development and commercialization, both from differences in patenting and SME's presence

A change of attitude both in industries and universities

Few Knowledge Transfer Departments in the Universities

Knowledge production and application need a critical mass of talents: how to pool resources?

A key-sector approach: the Nobel laureate

Rubbia: high tech is key, Italy is lagging behind

Priorities

Strategic framework

Picking the Sectors

Choosing the actions

Inhibiting mechanisms for Italy

The laggard Italy in EU and the world…let's invest in high tech/high skill…new vision…

A list of economic considerations: some "facts" and some "opinions"

Global competition irreversible; knowledge more important than capital for competition; lack of continuity; fast acceleration of processes; country R&D to attract FDI; high correlation between R&D and innovation/productivity

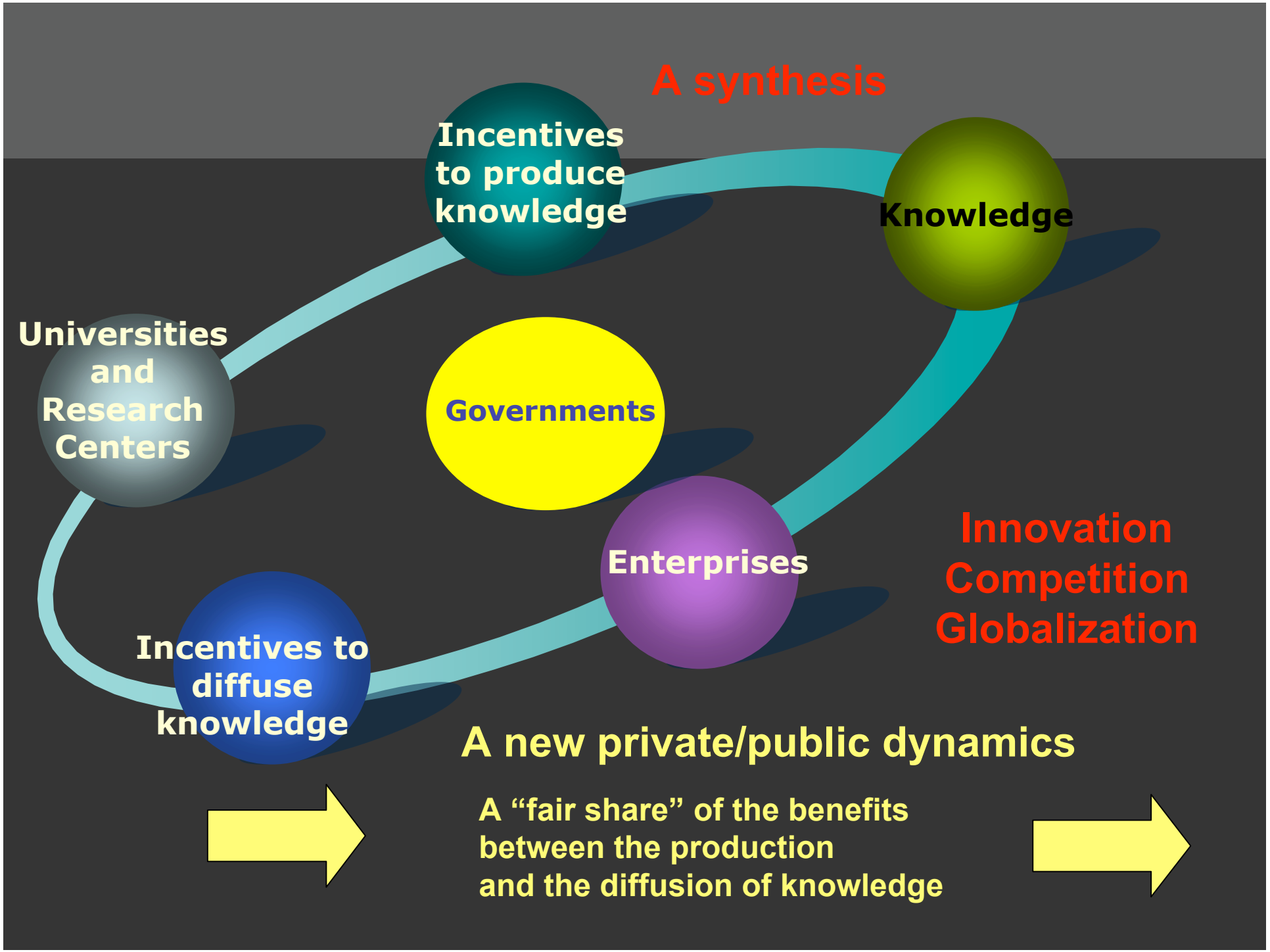
Italy little present in high tech/fast growing sectors; 4/100 top firms;

Key sectors: energy, transport, logistics, health, pharmaceuticals, electronics, robotics, etc

Sectors drive technologies….not the other way around

It is the way technology is used in a sector that is important, not isolated technologies

A strong support is needed for key sectors, with funding and scope for decisions


A synthesis
Incentives to produce knowledge
Knowledge
Universities and Research Centers
Governments
Enterprises
Incentives to diffuse knowledge
Innovation
Competition
Globalization
A new private/public dynamics
A “fair share” of the benefits between the production and the diffusion of knowledge

Research and Innovation-Role of Government

Rachel I. OBED
ICTP, Associate

HIGHLIGHTS of the G8 – UNESCO World Forum University of Trieste, 28 May 2007

OUTLINE

- Introduction
- SA Govt. encourages innovation
  (Hon. Mosibudi MANGENA)
- Stimulating Creativity in Engineering and Science (Prof. Martin PERL)
- Conclusion

Introduction

Govt. play a formative role in research and innovation through:

- Developing and approving policy
- Legislation and regulatory frameworks
- Setting the overall national agenda
- Creating an enabling environment for research and innovation to thrive

SA Govt. Encourages Research Innovation

- Private sector (56% of R&D performance)
- Govt. research institutes sector (21% of R&D performance)
- Higher education sector (21% of R&D performance)

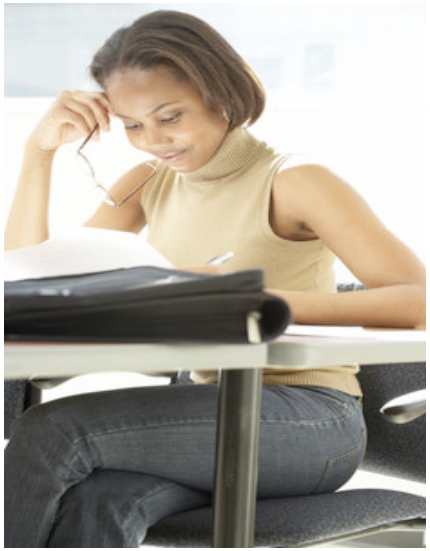
Note: Increase in SA's R&D expenditure from 0.68% in 1997 to approxly.0.87% in 2004.

Stimulating Creativity in Engineering and Science

- **Personal Creativity**
- **Creativity in Technical Education**

Personal Creativity

- Take account of your personality and temperament
- *Mathematical ability is important*
- Use patience and fortitude* in looking for good ideas
- In the modern world the highly productive lone engineer or inventor or scientist is rare
- Find colleagues who are smarter than you and know more.
- Avoid colleagues who are fast and loud talkers. In fact, it is best to avoid such people in general
- Obsession is important when you have a good idea in computing, engineering or science



*Motto of Fiorello LaGuardia New York Mayor in 1930's

Creativity in Technical Education

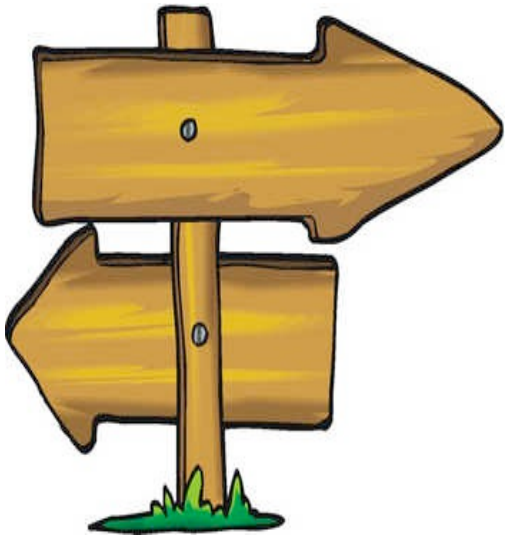
Problems faced by technical students and technical professionals:

- Engineering and science keep changing
- More and more to learn
- Competing with established technical centers
- Responsibilities to local and world needs

Creativity in Technical Education

9 PROPOSALS to help solve these problems

- **Reduce stress on students and reduce competitiveness between students.**
- **Reduce requirements for degrees.**
- **Rework laboratories so that there is an emphasis on process and problem solving rather than finishing prescribed experiments.**
- **Teach students to look for new directions in science and engineering, particularly directions that will fill local needs**

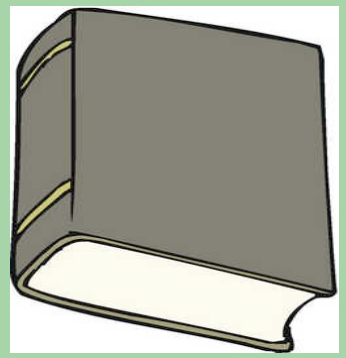


Creativity in Technical Education

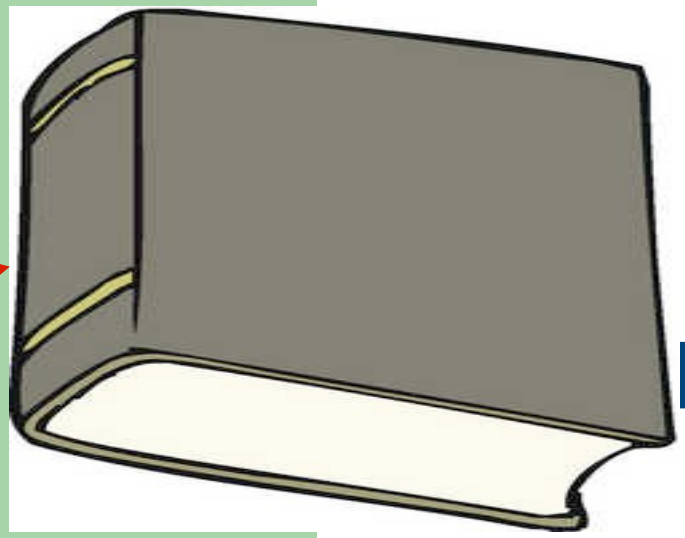
Proposal: Remove the pressure to study 24/7. Students should have time to relax and play and dream.

Creativity in Technical Education

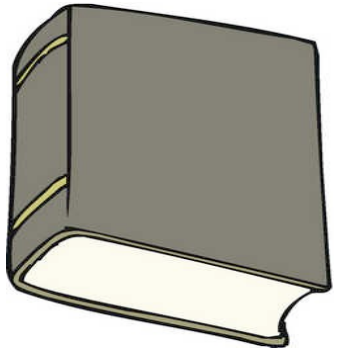
Proposal: Reduce length of courses and size of textbooks.



Older textbooks
or early editions



Present
encyclopediac textbooks



Goal

Creativity in Technical Education

Proposal: Teach students to learn as they go in their work or in new work.

You don't have to do extensive study to move into new technical areas. You can learn a subject or a technology as you need it.
You can learn quickly from colleagues or books or journals and WEB sites. Learn by doing.

Creativity in Technical Education

Proposal: There is an over emphasis on 'original research' as a requirement for a Ph. D. The work is usually part of a larger, ongoing research program. It is primarily training in R&D. This time should be limited to three years or less.

Personal Creativity

Above all, you must enjoy your engineering or science and like the people in that world.*

*At least like most of them

Conclusion

- Government should create an enabling environment for research and innovation to thrive
- Government should find ways of solving the problems faced by technical students and professionals because Engineering and Science keep changing
- Personal creativity is very important for government's role to be effective.

Thank you for your attention!

Grazie mille