Education et IT: Quelques défis
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IT Revolution in Higher Education

Beyond function, the IT Revolution affects form, i.e. how we teach as well as how education is received or perceived.

Pervasive access to information / Touch-and-go culture of learning
Educate scientists and engineers so their skills match the needs of the industry and society at large

EPFL education must have a differentiated value

An EPFL Graduate?

• Strong polytechnic foundations
• Not just able to master today’s technology but to anticipate changes
• The value of an EPFL graduate increases quickly with time in the industry.
The three units of higher education disrupted by blended learning

Place: EPFL campus
Action: Fluid Dynamics (Gallaire & Ancey)
Time: 18-25 y. old

Continuing education
Foster creativity, the skills to find new solutions
Reinforce interdisciplinary skills to prepare students for today’s engineering challenges

Develop independent thinking and adaptive problem-solving, prepare to face unexpected challenges
The surface: a set of new infrastructures

1 Engineering
   Electronics / Sensors-actuators
   Information technologies / Embedded systems

2 Materials and bioengineering
   Materials processing and characterization
   Bioengineering

3 Molecular
   Chemistry / Molecular biology / Biochemistry
   Biotechnology / Environmental biology and chemistry

4 Prototyping
   Mechanical and electronics workshops

5 Prototyping
   Materials and Structures

6 Physics

7 Chemical engineering

8 Informatics
   Fluid mechanics
But in practice it is much more!
New approach for hands on courses linked with MOOCs

Development of remote access experiments to allow students to run physical experiments at distance. The purpose of this development is to:

- Raise the number of students having access to experiments and give them the opportunity to work anytime
- Allow students to work from home on basic experiments saving their contact hours at EPFL to work on more advanced experiments
- Linked with MOOCs it offers the opportunity to foreign students to access courses proposed at EPFL

Remote access experiments have been developed for regulation and hydrodynamics courses.
The future of hands on courses

Interdisciplinary projects – List of ongoing projects at EPFL

Robot contest
EPFL internal competition Design and development of autonomous robot

Solardecathlon
International competition Design and development of energy efficient buildings to meet sustainable urban density

Lab in a tube
EPFL internal competition Design and development of flexible sensors for physiological monitoring

Hydrocontest
International competition Design and development of energy efficient boats

Space center
Various students projects are proposed by the space center

ME building monitoring
Monitoring of building – user flow and thermal management

CHIC
From one idea to a prototype: sourcing, assembling, prototyping and manufacturing a connected hardware device

IGEM
International competition of synthetic biology
Towards a more community driven approach?
Studying: reclaimed

All necessary information is there
It has been accurately classified
But access is not efficient

All necessary information is there, too!
Studying: reclaimed

Atomic elements of knowledge
Linked
Easily searchable
Easily accessible

IT infrastructure to access information in context
Conclusions

Education is evolving under the influence of IT

Beyond online education

- Project based
- Flexible access to content
- Modular content
- More fluid feedback from learners
- Easier to experiment and follow evidence-informed strategies