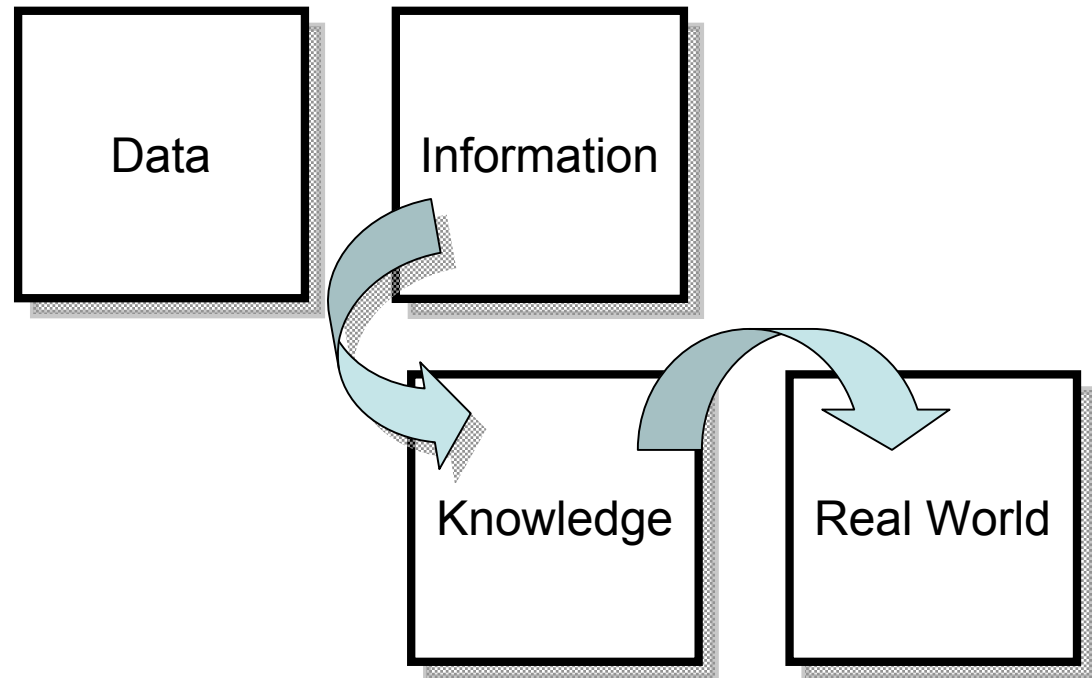


The Role of Learning Technologies in the next few years

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EPFL, CRAFT

which new technologies should be used for learning and how they should be used in order to improve the quality of teaching and learning

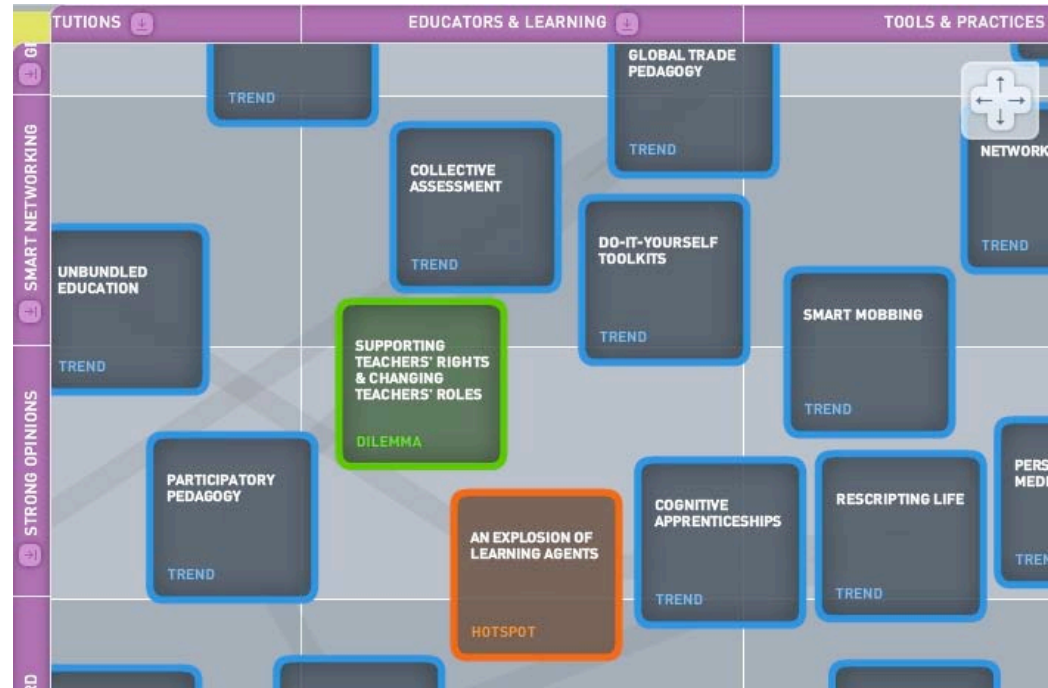
What is « better » learning and teaching ?



« You can't buy knowledge

- **Content => information**
 - learning tools as consumable products
 - knowledge « in the head »: acquisition
- **Interaction => knowledge**
 - learning tools as process enhancers
 - knowledge « in the world »: construction

Map of Future Forces Affecting Education 2006-2016



<http://www.kwfdn.org/>

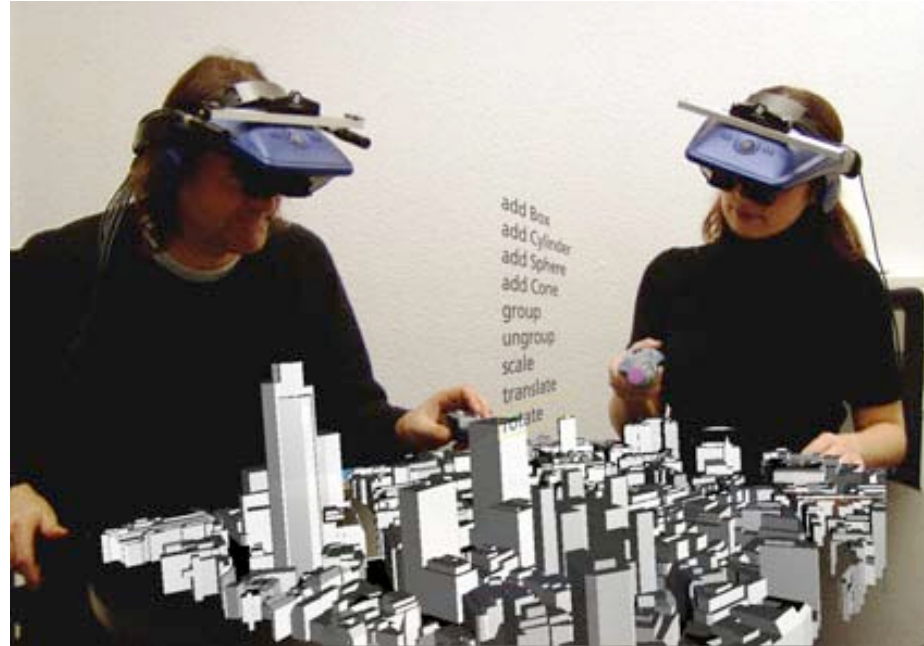


Environmental shifts

- Individual -> participatory
- Computer labs -> pervasive learning
- Consumer culture -> do-it-yourself
- Stable professions -> entrepreneurship
- The end of cyberspace

Convergence of physical and digital worlds

« The end of cyberspace
»



<http://www.vr.ucl.ac.uk/projects/arthur/>



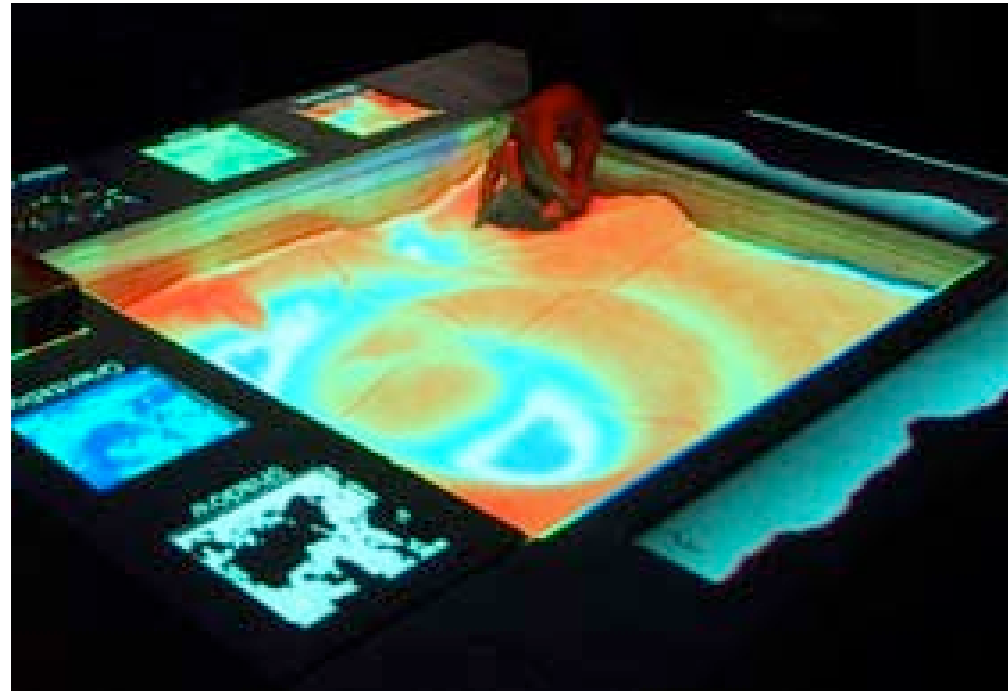
<http://www.alter-inc.com/wearable.html>

Augmented reality, Wearable computing, ...

- Sensors complement our traditional sensing organs
- Computers augment our perception of the environment

Convergence of physical and digital worlds

« The end of cyberspace
»



<http://tangible.media.mit.edu/>



<http://i3d.cs.colorado.edu/>

Tangible User Interfaces

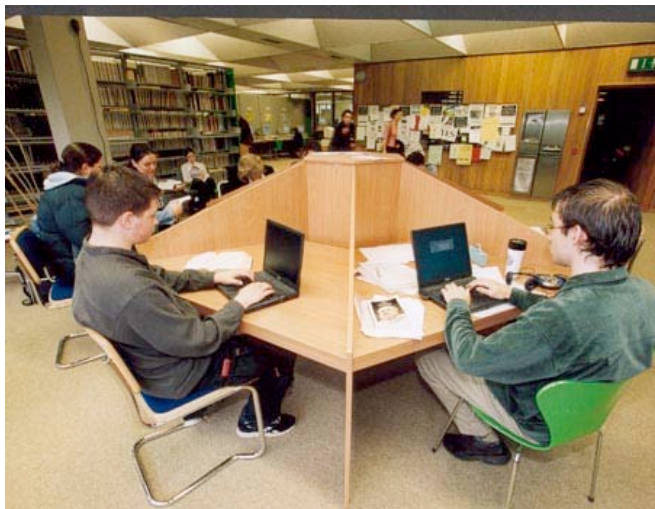
- We can control and configure computers by physical action
- Learners might benefit from « touching » and « twisting »
- Directness of collaboration

Convergence of physical and digital worlds

« The end of cyberspace
»



« Noise sensitive tables » CRAFT, F. Kaplan, K. Ba



Ubiquitous computing Interactive furniture

- Face-to-face
- Feedback loop - Distributed regulation
- Middle tech approach

**Yes, well,
that's nice,
but I have
100 students
in Physics 101
!**

Learning communities

Students:

- **Co-Create the course material**
- **Collect and aggregate evidence**

Teachers:

- **Invent and design tasks**

• **Organize, evaluate solutions**
« **Generation Y** » (kwfdn)
• **Train transfer to real-world**

- **Serious gamers**
- **Skilled multi-taskers**
- **Agile decision-makers**
- **Social networkers**
- **Cooperators**



**Yes, well,
that's nice,
but I have
100 students
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!**



TEAL physics studio, MIT



Fpga4u.epfl.ch

« **Integrated learning** »

- **Face-to-face and distance**
- **Collaborative and individual**
- **Lecture and problem-solving**
- **Orchestrated by the teacher**

The Role of Learning Technologies in the next few years

Computers will be:

- More powerful
- Integrated into the environment
- Everywhere ?

Should we use them to:

- Read powerpoint presentations
- Play with simulations
- Be aware and connected



(Our) Research directions

As an a priori approach:

- Active learners
- Design learning situations

Critical position towards