

# *Utilizing Technologies in Learning*

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## *Learning is "a hot topic" today!*

- 1) There is a transformation of industrial economy to knowledge economy and creative economy.

*The knowledge economy is based on "the production and distribution of knowledge and information, rather than the production and distribution of things" (Drucker, 1993, p. 182).*

- 2) Knowledge economy is also a learning society.
- 3) It is no longer possible to imagine that education ends by a certain age, after which learning is no longer necessary.



# *Key findings from the Learning Sciences*

*(Saywer, 2006)*

The importance of

- learning deeper conceptual understanding, rather than superficial facts and procedures.
- learning connected and coherent knowledge, rather than bits of knowledge.
- learning authentic knowledge in its context of use, rather than decontextualized classroom exercises.
- learning in collaboratively, rather than in isolation.



Stig Järrel i filmen Hets, 1944, copyright Pressens bild

# *Future school: Deep learning instead of transferring facts*



”Learning scientists have discovered that deep learning is more likely to occur in complex social and technological environments”

(Brandsford et al. 2000)



## *Why do we need technology for deep learning ?*

- Computers can represent abstract knowledge in concrete form.
- Computer tools can allow learners to articulate their developing knowledge in a visual and verbal way.
- Virtual forums offer opportunities for sharing and building knowledge together.
- Social interactions will be enriched.



*”Short history of utilizing  
technologies in learning”*



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# *This was the beginning ... adaptation of instruction to individual needs*





# *Peers interacting by the computer*



*...an interaction is enriching*



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# *CSCL occurs at various social levels*



*The boundary between CSCL and other forms of collaboration and various contexts is vanishing*



## *The evolution of research on technologies in learning*

(1990-1995) Productive social interactions can be engineered by carefully designing technology-based environments.

(1995-2005) The growth of a scientific community

(since 2005) Collaborative activities are getting integrated within physical, virtual and mobile spaces and teacher orchestration

## *Orchestrating activities*

*(Dillenbourg, Järvelä & Fischer, 2008)*

- Orchestration as the process of productively coordinating supportive interventions across multiple learning activities
- Orchestration covers different forms of coordination:
  - *activities at different social, contextual and media levels*
  - *scaffolds at different social levels*
  - *self-regulation and external regulation.*
  - *individual motivation and social processes*



## *Conclusions*

- Each time a new media enters the educational sphere, it generates over-expectations with respect to its intrinsic effects on learning.
- Technology alone does very little to aid learning, but students social and cognitive activities are critical.
- Helping students to activate their minds and enriching interactions are important.
- We need teachers to orchestrate larger pedagogical scenarios.
- Specific arguments for the choose and use of tools are needed.
- Learning Sciences help.