

What do employers want and need?

21st Century Education, CCR
Plenary Session
5.6.2012 Paris, France

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Expectations towards education rise and change

- Industries must become innovation-driven
- Working life is changing –skill and education needs of companies change
- Science education is important – but not the only skill for innovation, and not alone
- Rethinking and innovations needed in education!

Working life is changing fast

Work is becoming less routine and the variability of tasks is growing

Work is becoming more abstract.
Fewer jobs can be done "by the book"

The content and the rules of work have to be defined individually or with others

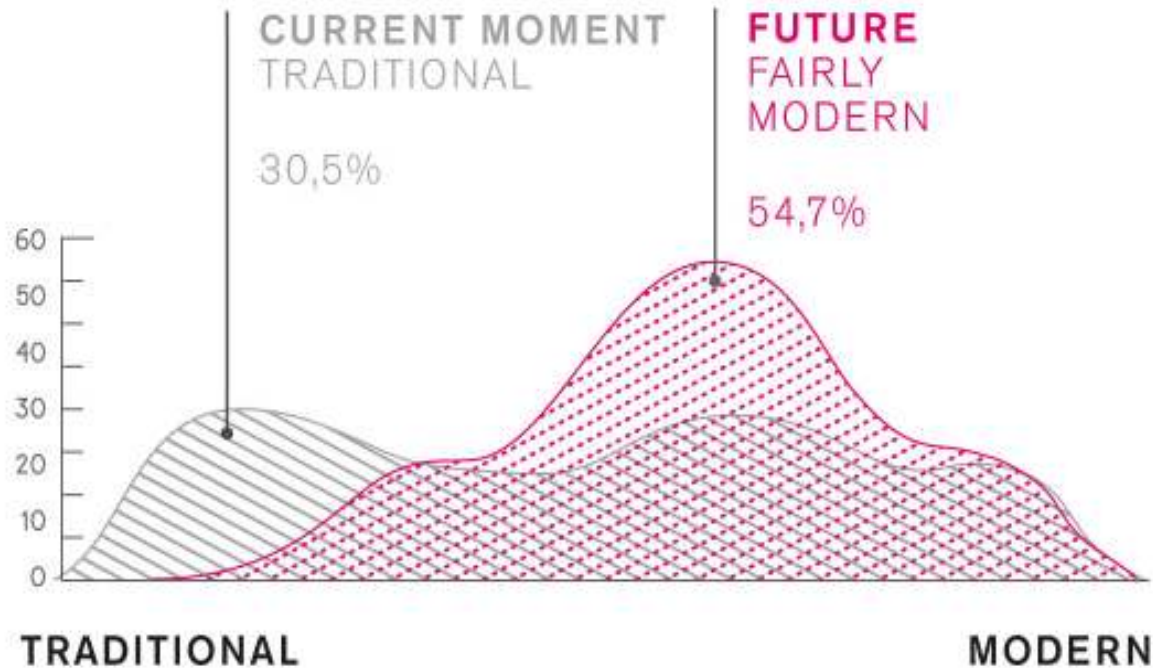
Goals can be reached in various different ways

Fewer and fewer tasks are performed in isolation

The changes are also reflected in the management and the organization of work



”Well that sounds nice but surely it does not apply to all jobs?”



In the beginning of the year 2011, Oivallus asked companies about the ways of working now and 5-10 years from now. Of the randomly selected member companies of the Confederation of Finnish Industries, a total of 100 companies answered the questionnaire. The respondent companies employ a total of 60,000 persons.

Skill and education needs change

- Expertise in innovation-driven societies
 - Curiosity, motivation, interest
 - Collaboration, creativity, critical thinking (mind set and skills)
 - Networking skills (mind set and skills)
 - Global “working together” skills (mind set and skills)
 - Business expertise
 - Technological expertise
 - Environmental skills
 - Service skills
 - Design thinking



Skills

=

The way we relate to others

+

The way we relate to information

Science education is important, but...

- In innovation-driven societies, science skills matter, for sure!
- But: small differences between areas of expertise in jobs where innovations were expected (OECD Conference - Educating for Innovative Societies 26.4.2012)
- In technology-related innovations, science skills have a huge importance, but even there they do not have the monopoly for being “THE” skills for innovation
 - E.g. green economy

Does science education enhance innovation?

Lessons from the OECD conference 26.4.2012

- OECD study on teaching methods (interaction, hands-on, application, autonomous investigation
 - Application has the best chances to result in high interest
- Train to be curious, allow questioning
- Make connections with the real life phenomena
- Avoid embarrassment
- Complex problems often require group solutions
- Enhance positive (not negative) critical thinking
- Require accountability, encourage participation, use variety of methods



Does science education enhance innovation?

Lessons from the OECD conference 26.4.2012

- Use also complex, unfamiliar, non-routine, authentic problems
- Cooperation with other disciplines
- Develop pupils' abilities to use learning strategies and their awareness that they use them, activate the trigger in the brain... (meta-cognition)
- Creative learning: learning is about creating information/knowledge/understanding, not only adopting...
- Hard and long practice needed in learning (new ways of thinking and doing)
- Capability belief (underachieving vs. overachieving)



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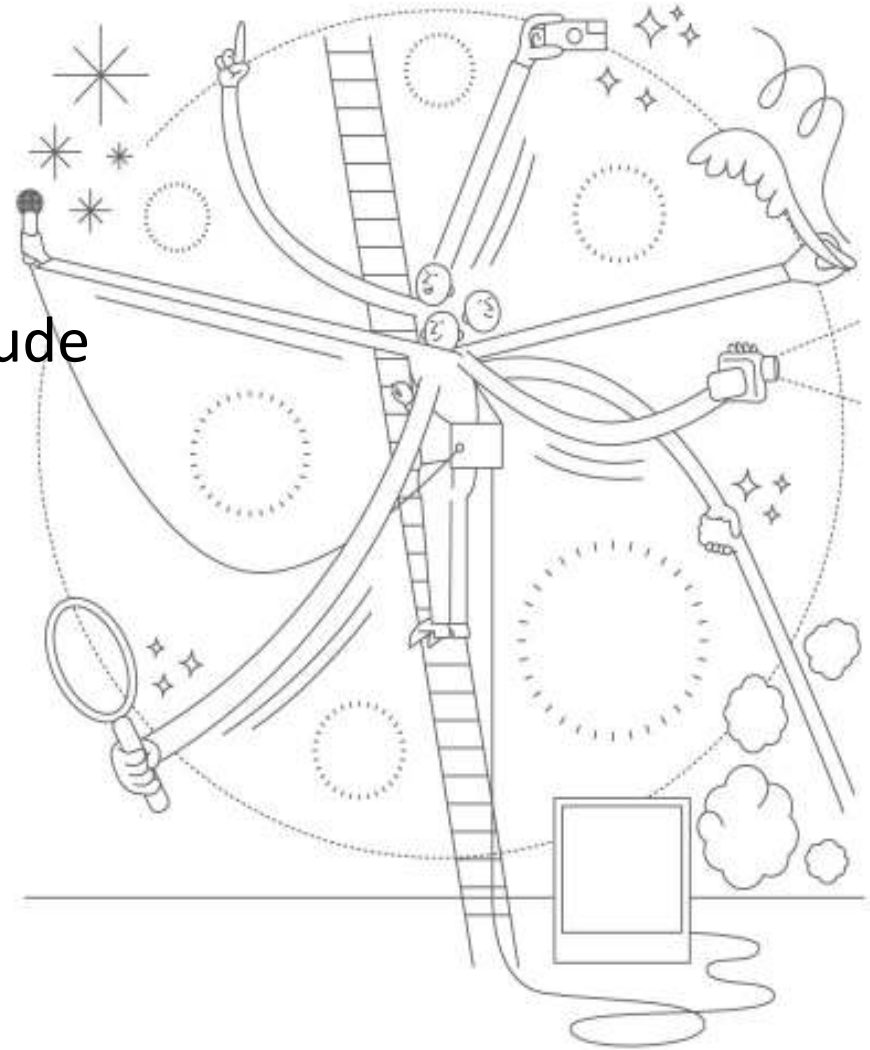
”Does the Confederation of Finnish Industries think that companies are successful when people mess around?”

No, but promoting creativity should be the basis of all education!



Creativity \approx entrepreneurial attitude

- Divergent thinking
- Courage to grab problems
- Enthusiastic experimenting
- "The core of entrepreneurship is in daring to try."



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The scales should be tilted to the **right**: it is not a zero-sum game.

