

The importance of innovation in education

October 17, 2013



“Our task is to provide an education for the kinds of kids we have, not the kinds of kids we used to have, or want to have, or the kids of our dreams.”

K.P. Gerlach

Who are these 21st century learners?

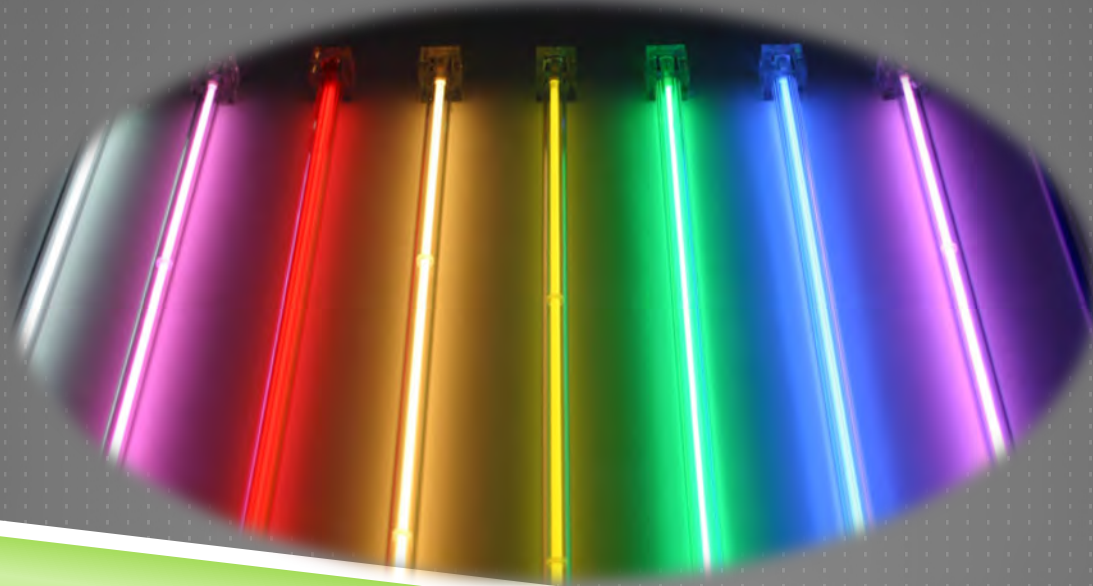


They are:

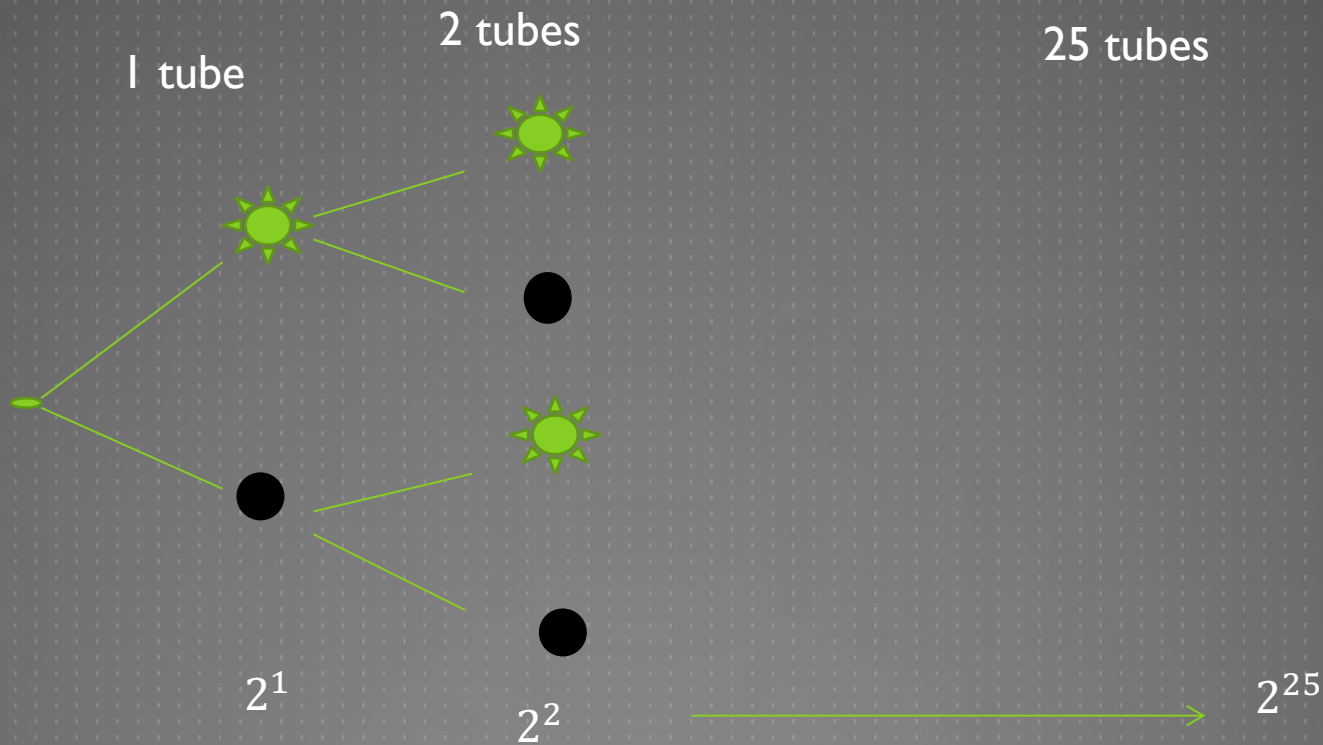
- Mobile
- Networked
- Global
- Collaborative
- Self directed
- Inquiry based
- Creative
- Multi tasking

AN EFFICIENT START WITH A SHORT TEST!

- ▶ Problem:
 - ▶ How many ways are there to light a room that has **25 neon tubes** on its ceiling?



THE MATHEMATICAL SOLUTION



approximate value of 2^{25} :

$$2^{10} \approx 10^3$$

$$2^{25} \approx 10^3 \cdot 10^3 \cdot 32$$

=32 million different possibilities!

HOW DOES THIS RELATE TO TEACHING?



**Mission impossible?
However, this is 90 per cent of
today's teaching practice!**



This means the teacher would have to take into account 32 million possibilities for a class of 25 students!

On the other hand, in **10** minutes, the world witnesses ...

- ▶ 1,5 billion emails
- ▶ 3,5 million operations by searching engines
- ▶ 200.000 apps downloaded to mobile devices
- ▶ 1.500 questions answered online
- ▶ 6.000 newly recorded videos
- ▶ 15.000 new comments on blogs
- ▶ 1 million of tweets
- ▶ 4 millions of new comments on Facebook

... and this is the pupils' environment:

- ▶ Medias → YouTube
- ▶ Journalism → Twitter
- ▶ Books → Kindle
- ▶ Music → iTunes
- ▶ Communication → Facebook
- ▶ Games → Nintendo, PlayStation, Gameboy, Gaming PC, Xbox, ...
- ▶ Looking for information → Google, Yahoo



Is technology really part of the curriculum?

Answer: NO!

- ▶ Teachers merely use ICT for presentation
- ▶ Students hardly use ICT for school research

“In an effective 1 to 1 programme, up to 70% of use for learning takes place outside traditional school hours.”

ITL Research, 2011

Quite a challenge ... !

- ▶ Preparing students for jobs that don't yet exist!



What experts say ...

"Books will soon be obsolete in the schools. Scholars will soon be instructed through the eye. We are going to teach every branch of human knowledge through the motion picture. Our school system is completely changed in ten years."

Really true?

Thomas Edison, 1913

Looking back:

An educational (R)evolution every fifty years?

- ▶ 1913
- ▶ 1913+50: Television
- ▶ 1913 +50 +50:

“The net seems to destroy my faculty of concentration and contemplation”

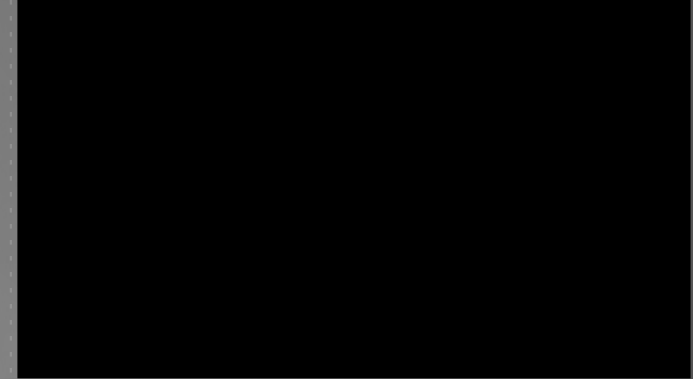
Nicholas Carr,
The Shallow, N.Y. Norton, 2010

Must read: *“Digitale Demenz: wie wir uns und unsere Kinder um den Verstand bringen.”*

Manfred Spitzer,
August 2012

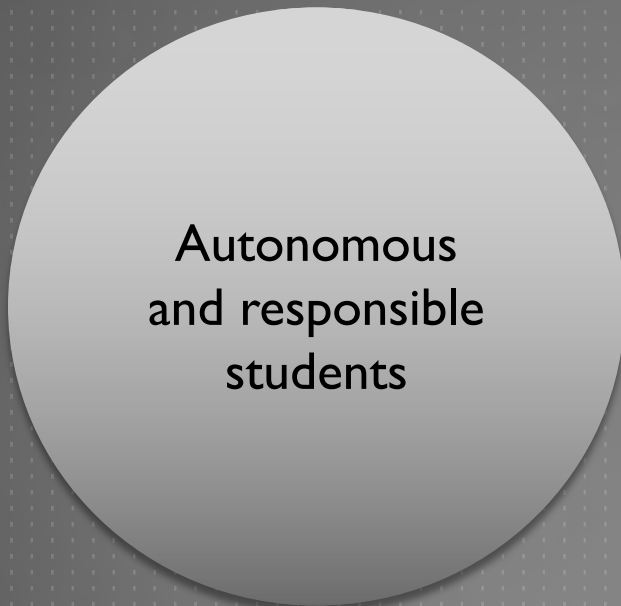
Top 21st century skills according to researchers:

- ▶ Problem solving
- ▶ Looking for information/data
- ▶ Critical thinking
- ▶ Collaboration
- ▶ Adaptation and flexibility
- ▶ Creation and innovation
- ▶ Communication



Core values that never change

The student plays an active role in his learning process



The three key competencies defined by the OECD

Autonomous action

Interaction within heterogeneous groups

Using tools in an interactive way

The 21st century learning environments

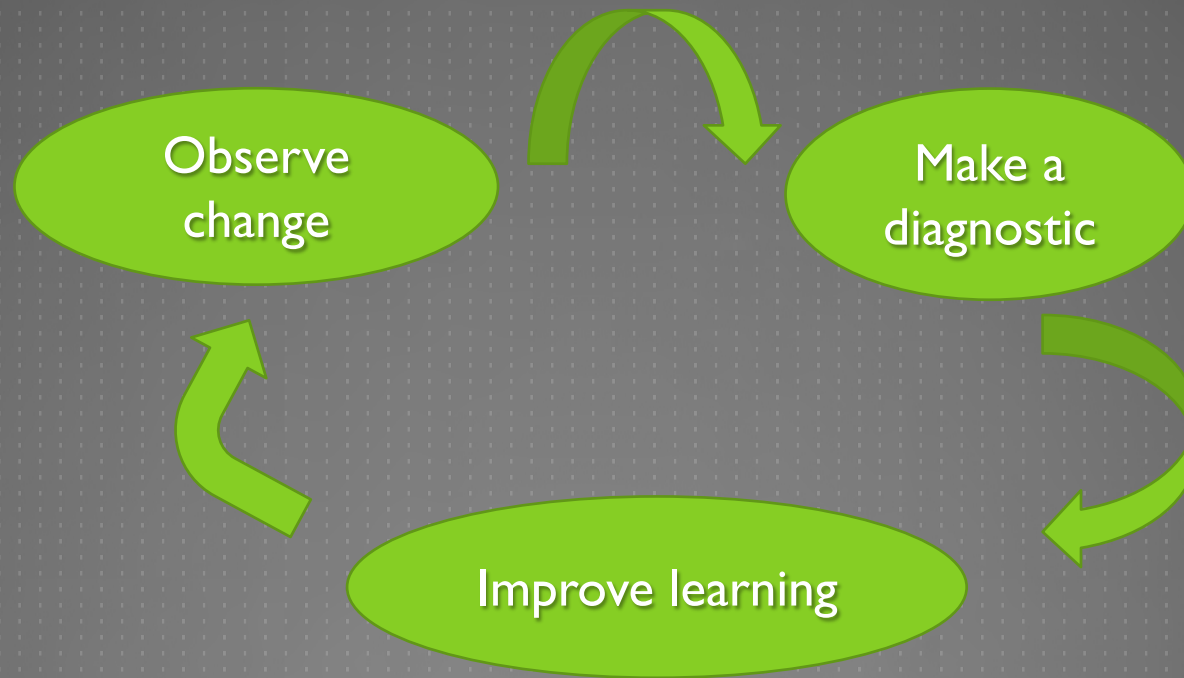
- ▶ **A new learning community**
 - ▶ A shared vision
 - ▶ Delegating leadership
 - ▶ A comprehensive subgroup structure
 - ▶ A collaborative decision-making process
 - ▶ Learning beyond the classroom
 - ▶ Promoting social skills

At school level, you need

- ▶ A climate of **confidence**
and
- ▶ **Responsibility** for every actor

Voting

A rich school environment



Source: Lonka & Ketonen, 2012

JOHN HATTIE'S "VISIBLE LEARNING"

(2012)

	Effect Size	Source of Influence
Feedback	1.13	Teacher
Student's prior cognitive ability	1.04	Student
Instructional quality	1.00	Teacher
Remediation/feedback	.65	Teacher
Student's disposition to learn	.61	Student
Class environment	.56	Teacher

Three habits of the top 21st century teacher



1. **I believe in my students**
2. **My classroom connects**
3. **Students are involved**

IN THE CLASSROOM:

JUST ONE EXAMPLE

“GIVE YOUR VISION OF EUROPE IN 1 MINUTE”



The revised Blooms' taxonomy

In the classroom... redesigning learning and teaching

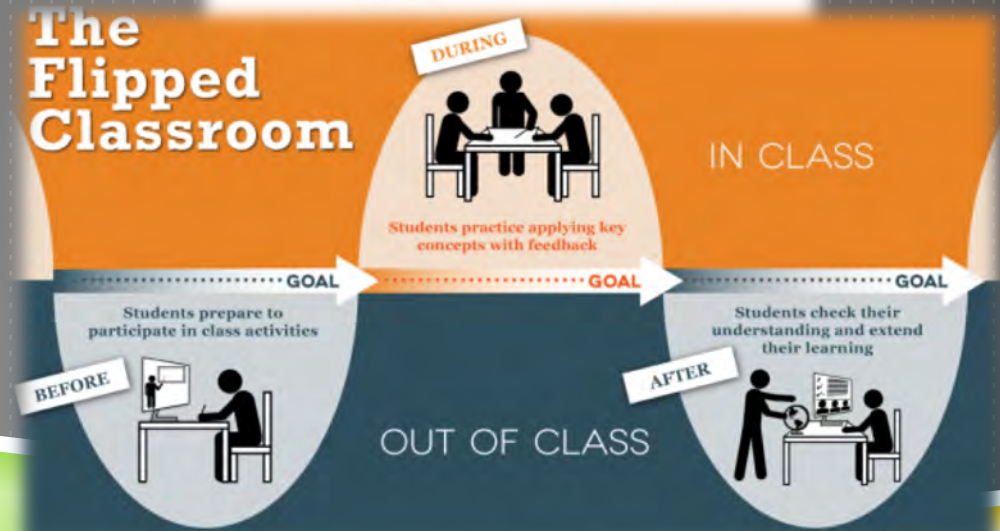
We have to move from.... towards

- ▶ **teacher centric** → student centric learning
- ▶ **fixed time, variable learning** → fixed learning, variable time
- ▶ **knowing** → knowing how to learn

Collaborating is not cheating!

AN INTERESTING PERSPECTIVE

- ▶ Blended learning
- ▶ The flipped classroom



“BE THE CHANGE THAT YOU WISH TO SEE IN THE WORLD.”

Mahatma Gandhi



I have a vision:
A school **inviting**
its students
to become
the **inventors**
of their future.