

# Learning and Teaching in the Digital Age: The theory and the practice

**Steve Wheeler**  
Plymouth University, UK

Adult Learning Symposium, Singapore: November 4, 2016



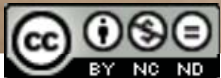
**It's a girl!**

**“The average digital birth of children happens at about six months.”**

# Digital natives?



© Steve Wheeler, University of Plymouth, 2016





Ken Wheeler added 2 new photos.

21 May at 09:48 · 🌐

This was in 1949 in Tripoli Castle Benito, the maiden trail of the Comet,



Luckily when I joined the RAF I was on the last so I knew how to butcher meat, but most did not we had the same Army rations, then the army sent us to the Middle East, and the Royal Navy took over the rations. I say the standard was so high, every thing arrived in boxes, chops, mince beef, roasting joints, diced beef, all done for us, all we had to do was get on with cooking and defrosted.

It made life a lot easier for us chiefs. one day I went to the Navel cold store to pick up a load of Rations. I was surprised to find it was inside the Rock it's self, it must have been the coldest place on the Rock, it was so cold in there. we were only in our KD and shorts so you didn't want to stay in there too long.

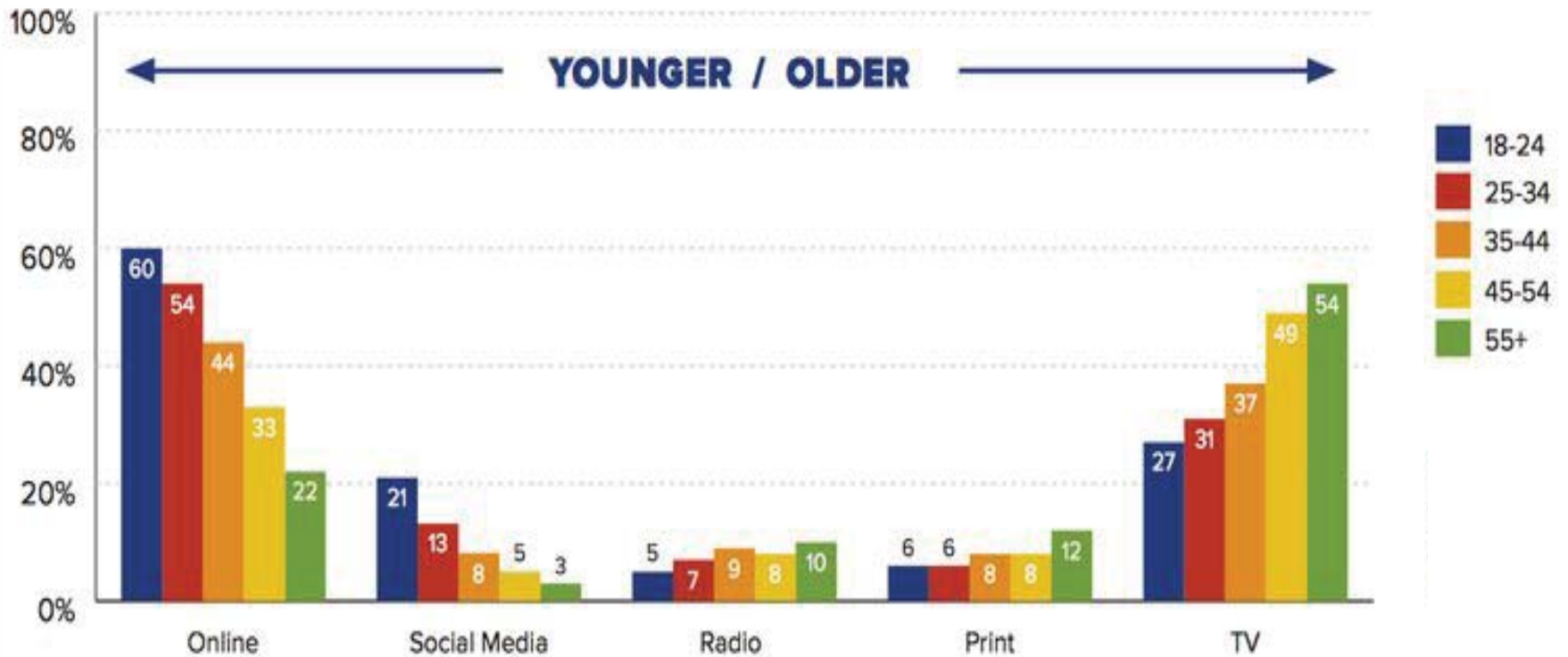
Funny people the Navy, or Blue jobs, has we called them, they were a crowd on their own, never friendly toward the RAF or the Army for some reason, it was like we were from another planet. but their rations were the best ever, I'll give them that. when I was in Castle Benito (North Africa) one of there Aircraft Carriers, HMS Ocean was in Malta for a refit, so to continue the training of the air crews, they flew to us,, they were young inexperienced pilots, and they were flying, I think? Sea Fires, a navel version of the Spitfire, they were doing all right, landing on the runway, and taking off, but then they painted great white lines on the Runway the size of the deck of the Air craft Carrier, that was not so easy for them, at the end of they stay with us. they had to leave more then half their planes, that had been damaged on landings, and the mechanics to repair them, they would fly out when that Ship came back after Sea trails. One of the things I learned, was that no one in the Navy did anything with out being told to so, where has we in the RAF, would act on our own, if we saw something needed doing we did



***‘In the act of writing, we are written.’ – Daniel Chandler***



# MAIN SOURCE OF NEWS BY AGE



Source: Reuters News 2015 (n=23155)



## Digital Residents and Visitors (White & Le Cornu, 2012)

## 3 biggest fears of a teacher using technology

1

How do I make this work?

2

How do I avoid looking like an idiot?

3

{They will know more about this than I do}



# 3 biggest fears of a student using technology

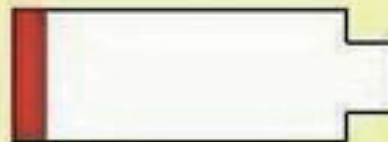
1



2




3



**I showed my 18 year old son an  
old floppy disk....**



**He said “Wow... Cool!  
You 3D printed the Save Icon!”**



*“For the first  
time we are  
preparing  
learners for a  
future we  
cannot clearly  
describe.”*

**- David Warlick**

# “Education in the year 2000”

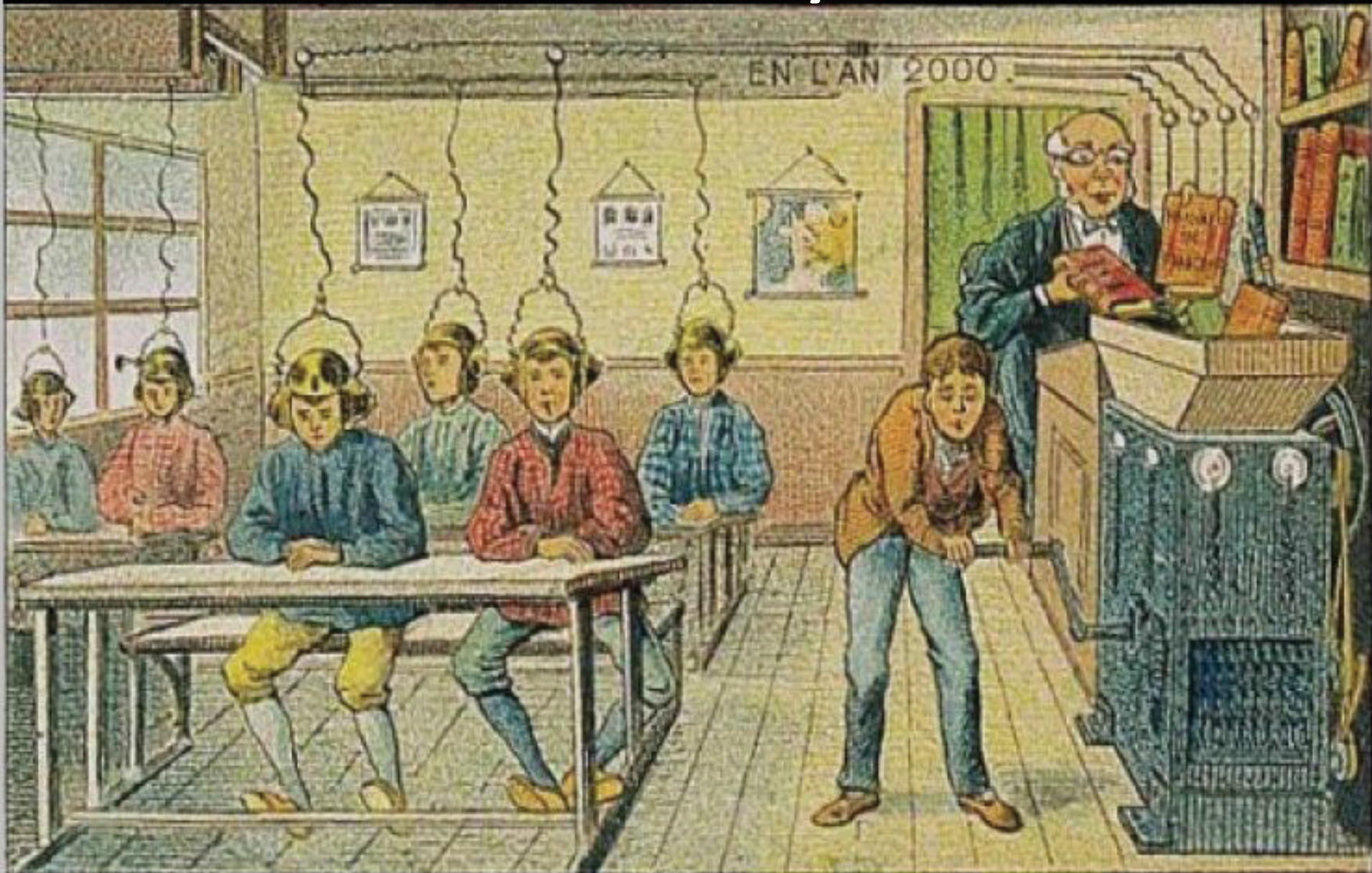




Image source: <http://www.deism.com/images1/Voltaire.jpg>

***“Every man is a creature of the age in which he lives, and few are able to raise themselves above the ideas of the time.”***

**- Voltaire**



*“I truly believe that one day, there will be a telephone in every town in America.”*

- Alexander  
Graham Bell

# The First Mobile Phone



# Free Charging

W1

W2

W3

W4

W5



# Free Charging

X1

X2

X3

X4

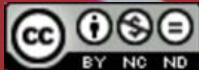
X5

# Free Charging

# Free Charging



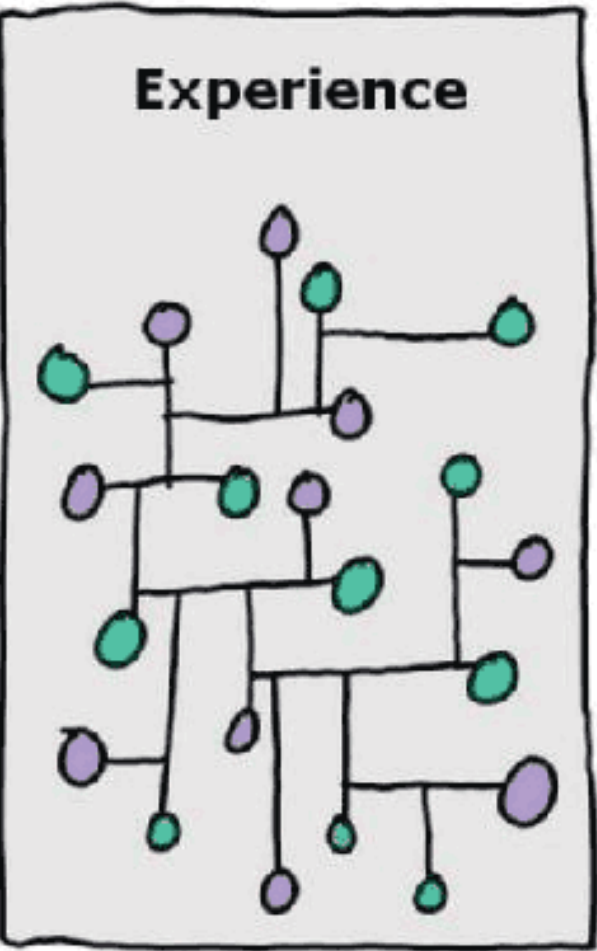
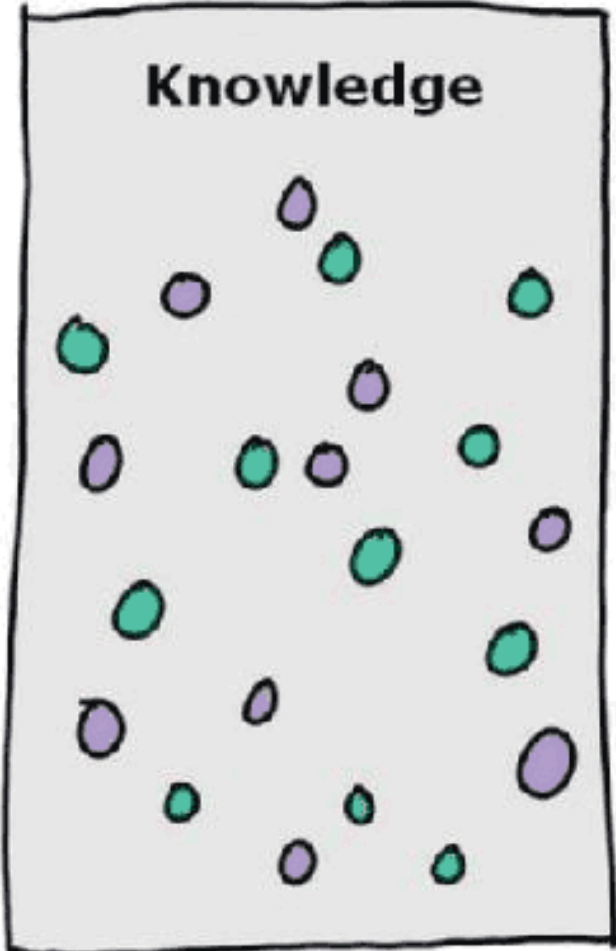
# Vodafone





**Knowledge**

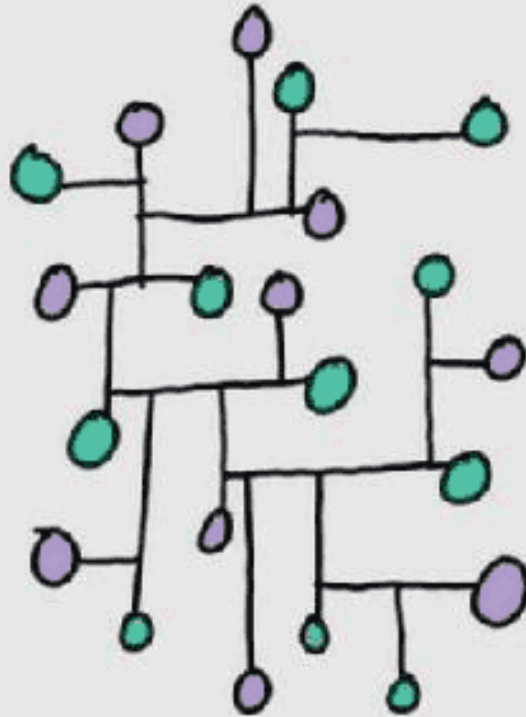
**Experience**



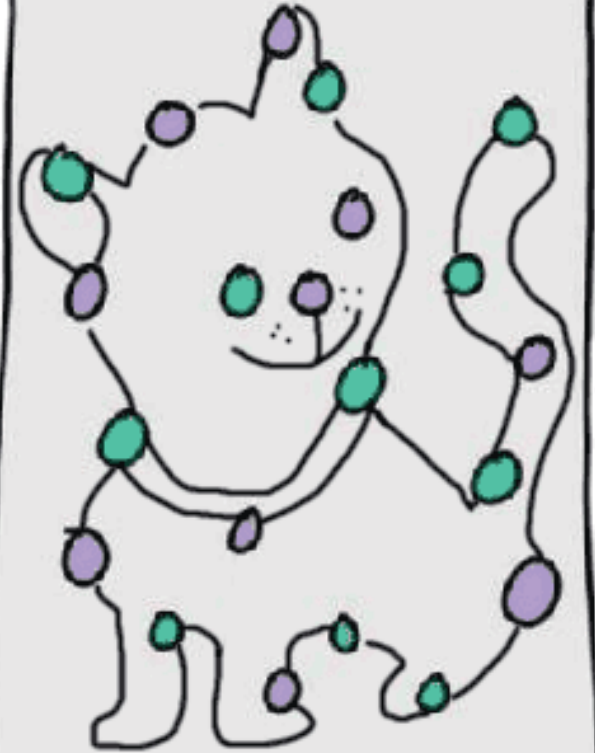
# Knowledge

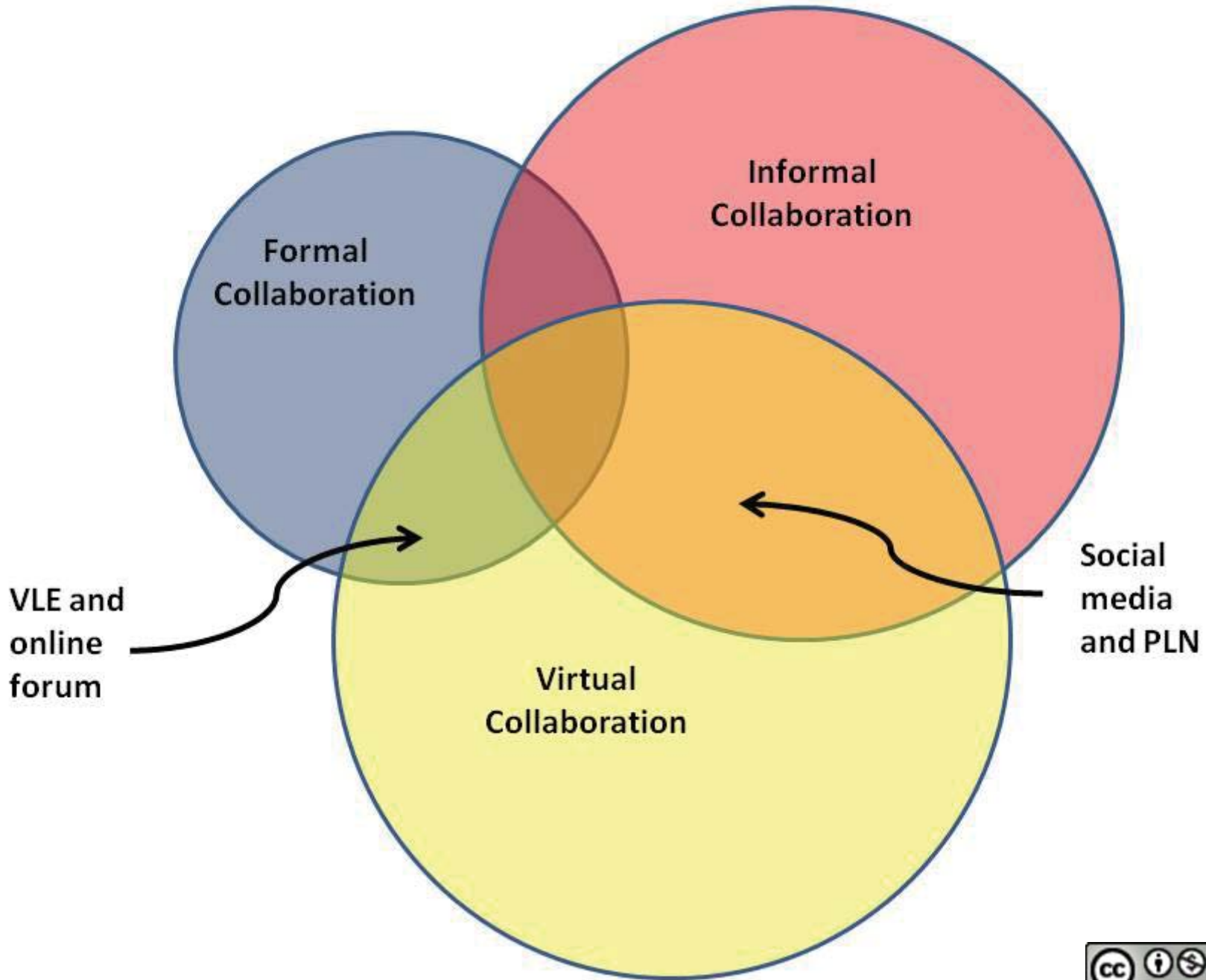


# Experience



# Creativity





VLE and  
online  
forum

Social  
media  
and PLN

© Steve Wheeler, University of Plymouth, 2016





***“The empires  
of the future  
will be  
empires of  
the mind.”***

**– Sir Winston Churchill**

# Learning in the digital age

# Affordances



An **affordance** is the possibility of an action on an object or environment. The original definition in psychology includes all actions that are physically possible.

James J. Gibson (1979), *The Ecological Approach to Visual Perception*. New York: Psychology Press.



# Who will be our learners?



Image source: <http://www.jisc.ac.uk/sites/default/files/lecture-hall.jpg>

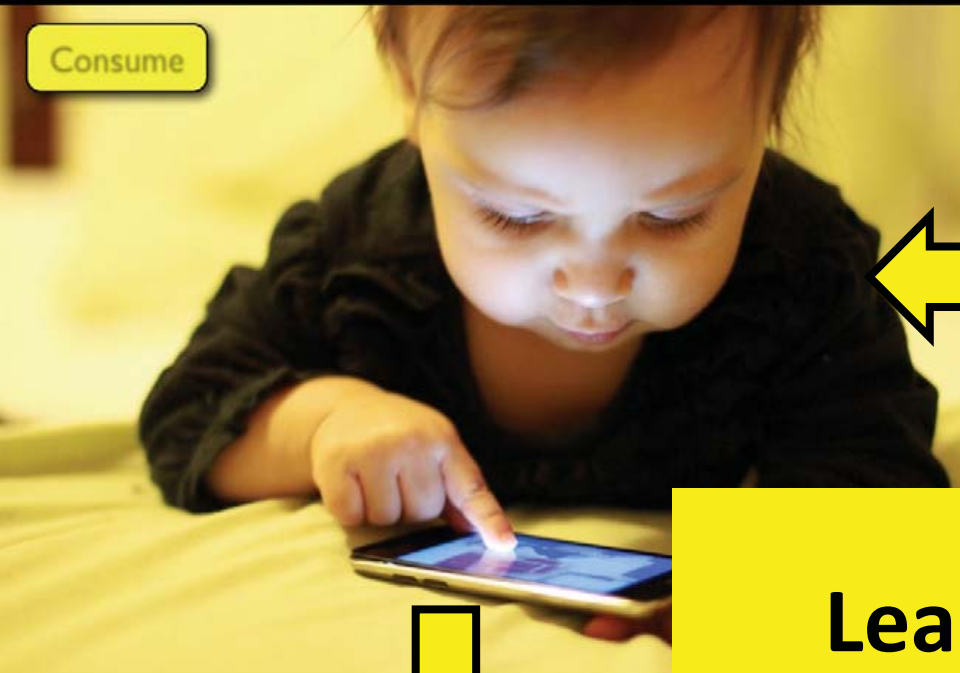
# Meet Learner 2.0





Consume

Remix



Learning  
is changing

Produce





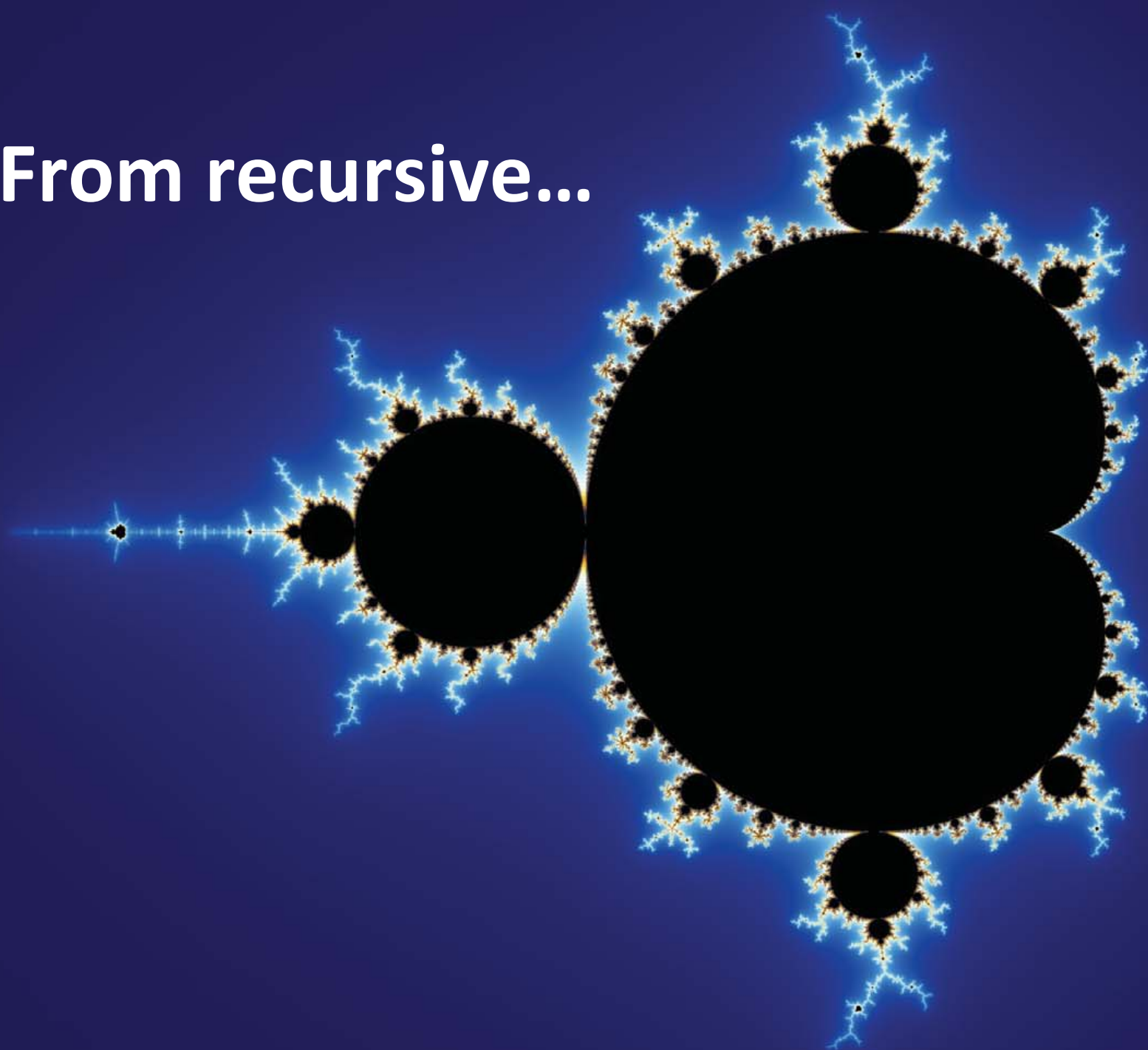
Photo by Steve Wheeler

# Personal windows on the world



# New pedagogies in the digital age

From recursive...



**After explaining to a student through various lessons and examples that:**

$$\lim_{x \rightarrow 8} \frac{1}{x-8} = \infty$$

**I tried to check if she really understood that, so I gave her a different example.**

**After explaining to a student through various lessons and examples that:**

$$\lim_{x \rightarrow 8} \frac{1}{x-8} = \infty$$

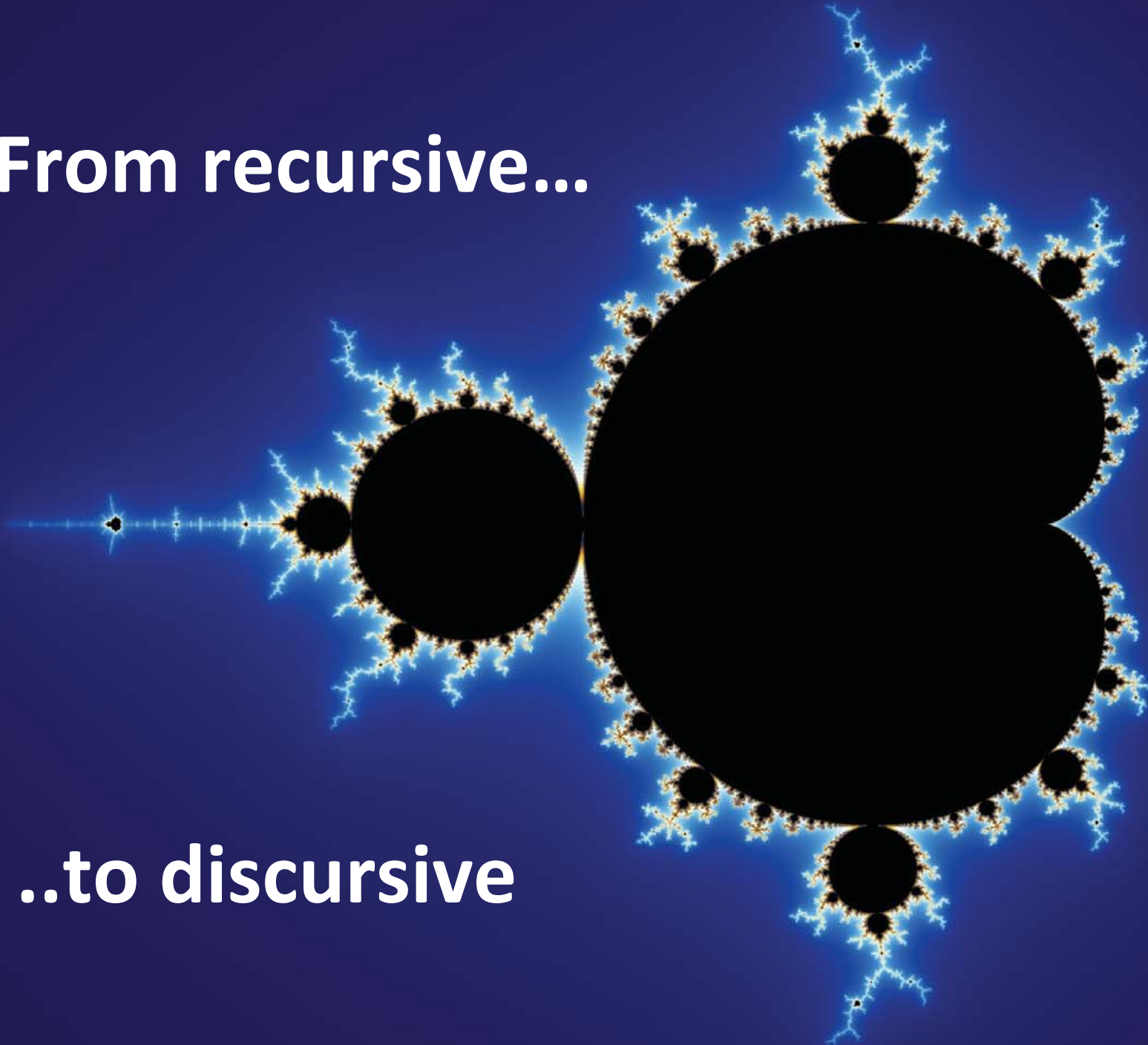
**I tried to check if she really understood that, so I gave her a different example.**

**This was the result:**

$$\lim_{x \rightarrow 5} \frac{1}{x-5} = 5$$

**From recursive...**

**..to discursive**





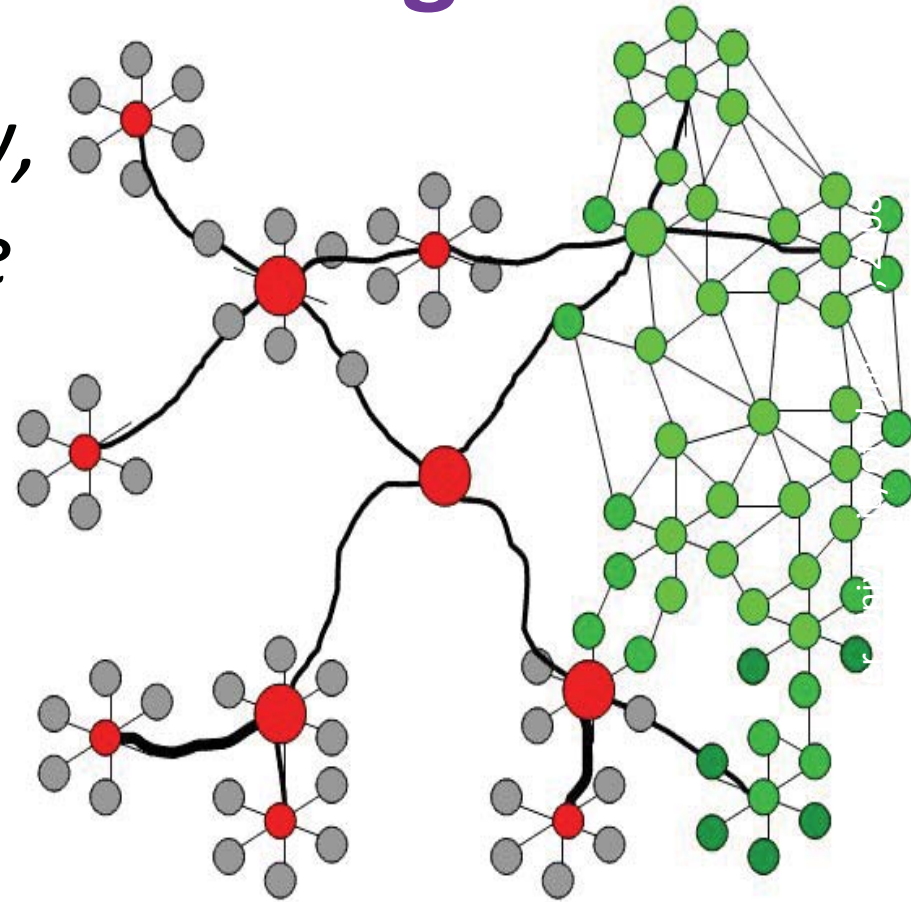
# Rhizomatic Structures

Deleuze & Guattari



# Rhizomatic learning

*“In the rhizomatic view, knowledge can only be negotiated, [and is] a personal knowledge-creation process with mutable goals and constantly negotiated premises.”*



**“I store my knowledge  
with my friends”**



**Connectivism**

# Making Connections

In **Connectivism**, learning involves creating **connections** and developing a **network**. It is a theory for the digital age drawing upon chaos, emergent properties, and **self organised** learning.

(It's not what you know, but who you know)



Photo by Steve Wheeler



# Communities of Learning



Photo by Steve Wheeler



# Professional Learning Networks



Photo by Steve Wheeler



# Professional Learning Networks



Photo by Steve Wheeler



# Professional Learning Networks

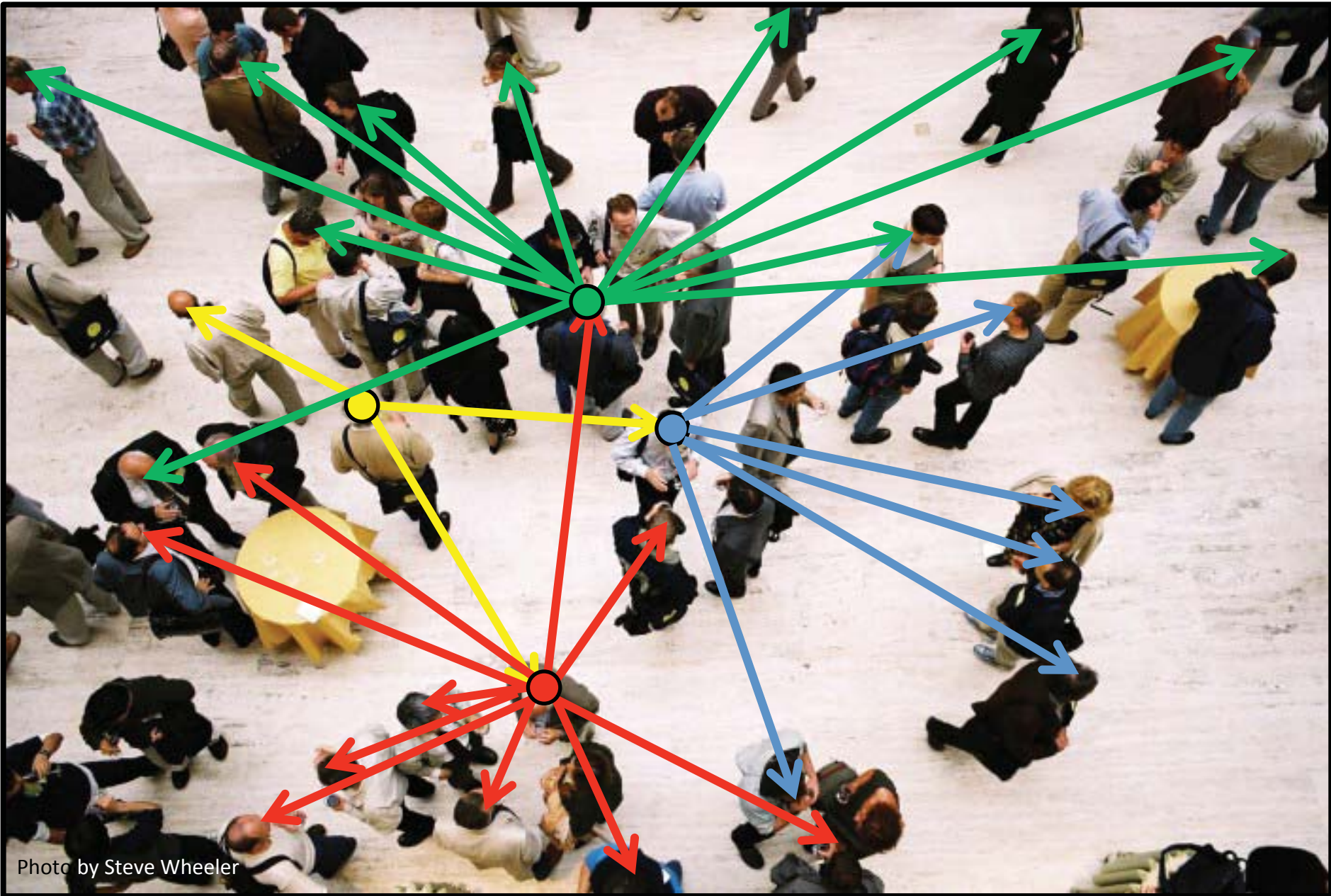


Photo by Steve Wheeler



# Professional Learning Networks



# New theories for the digital age



**Connectivism**

**Paragogy**

**Heutagogy**

# Personalisi ng learning

# Factory education model?

**Synchronisation**

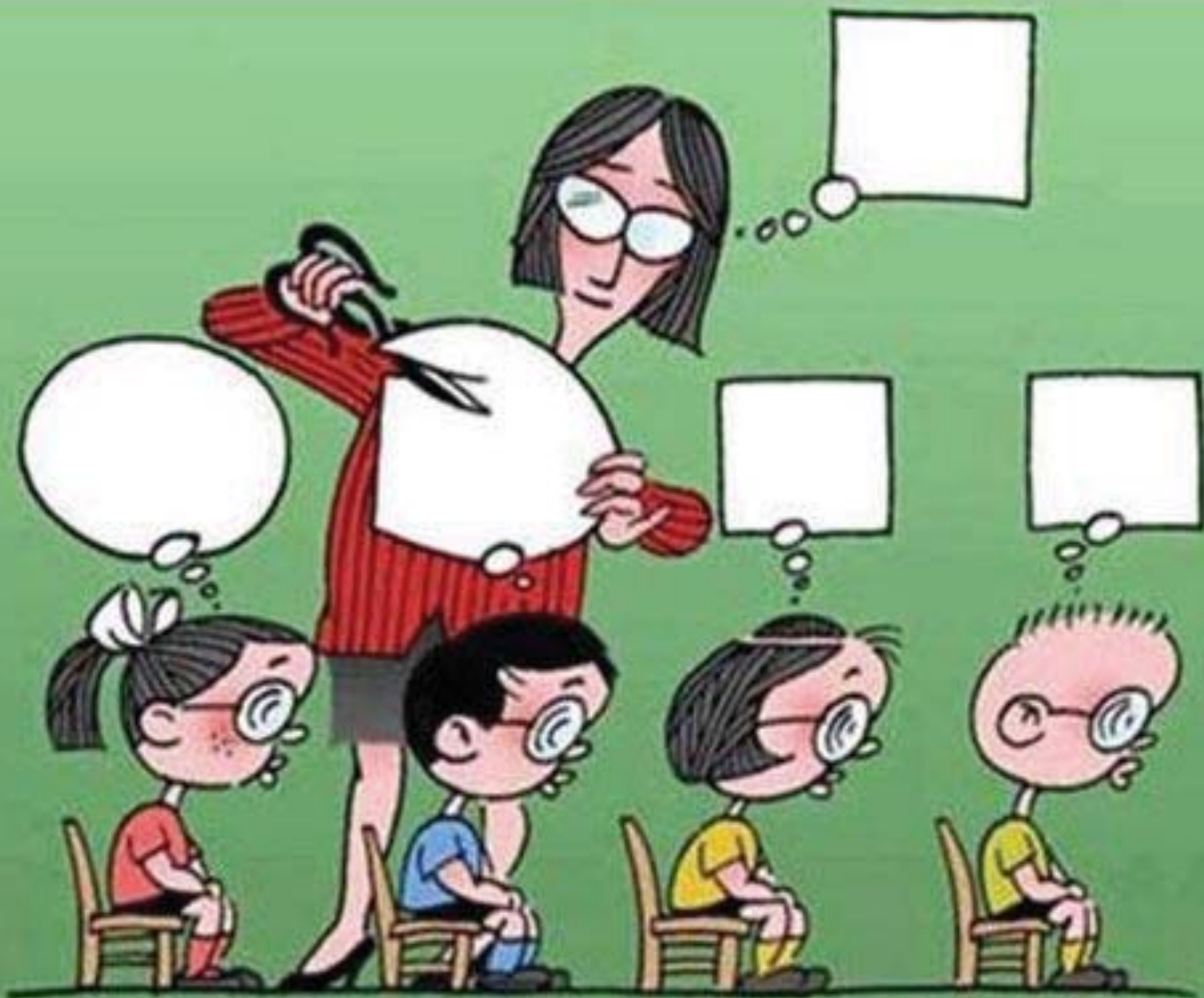
**Compartmentalisation**

**Batch processing**

**Standardisation**

<http://farm4.static.flickr.com>







**Design**  
**VS**  
**User Experience**



User experience

Design

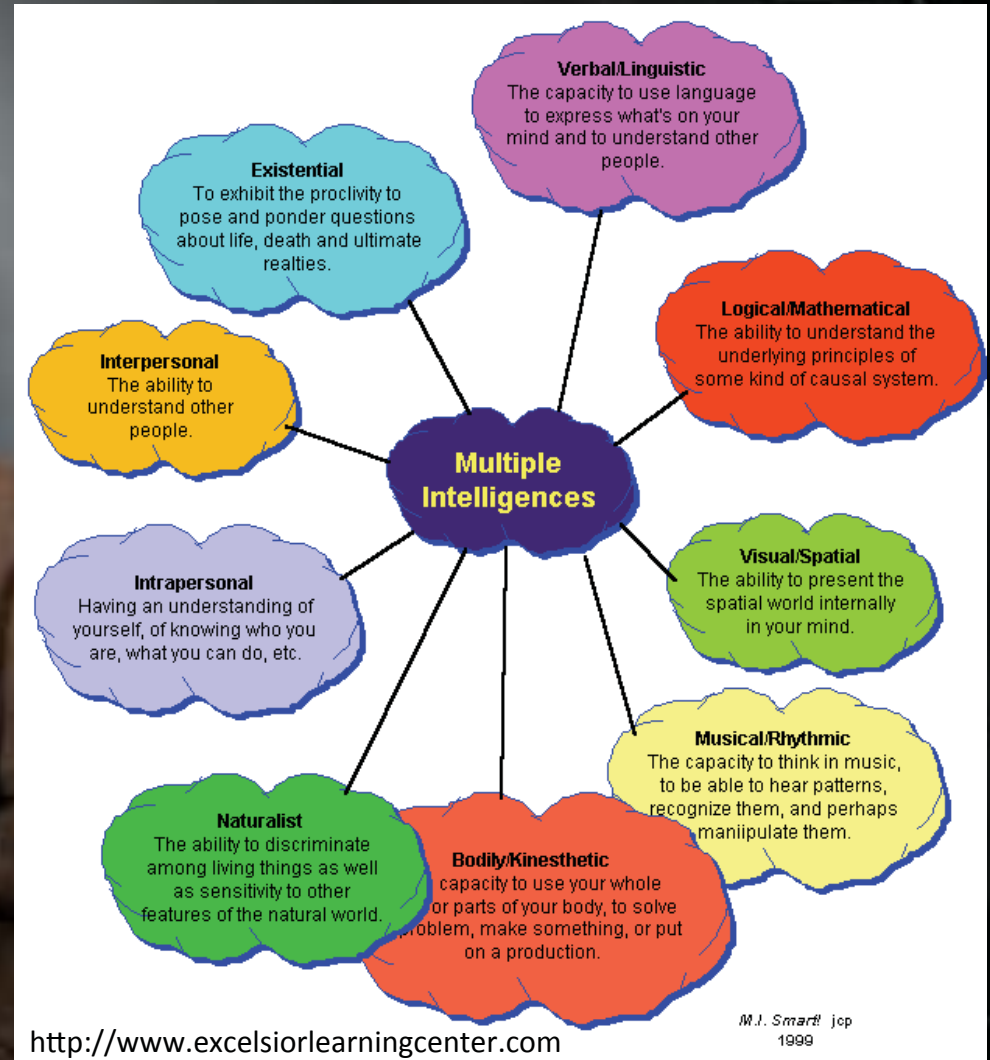
‘Desire lines’

Personalised learning means ensuring  
that individual differences are  
acknowledged and supported





# Multiple Intelligences



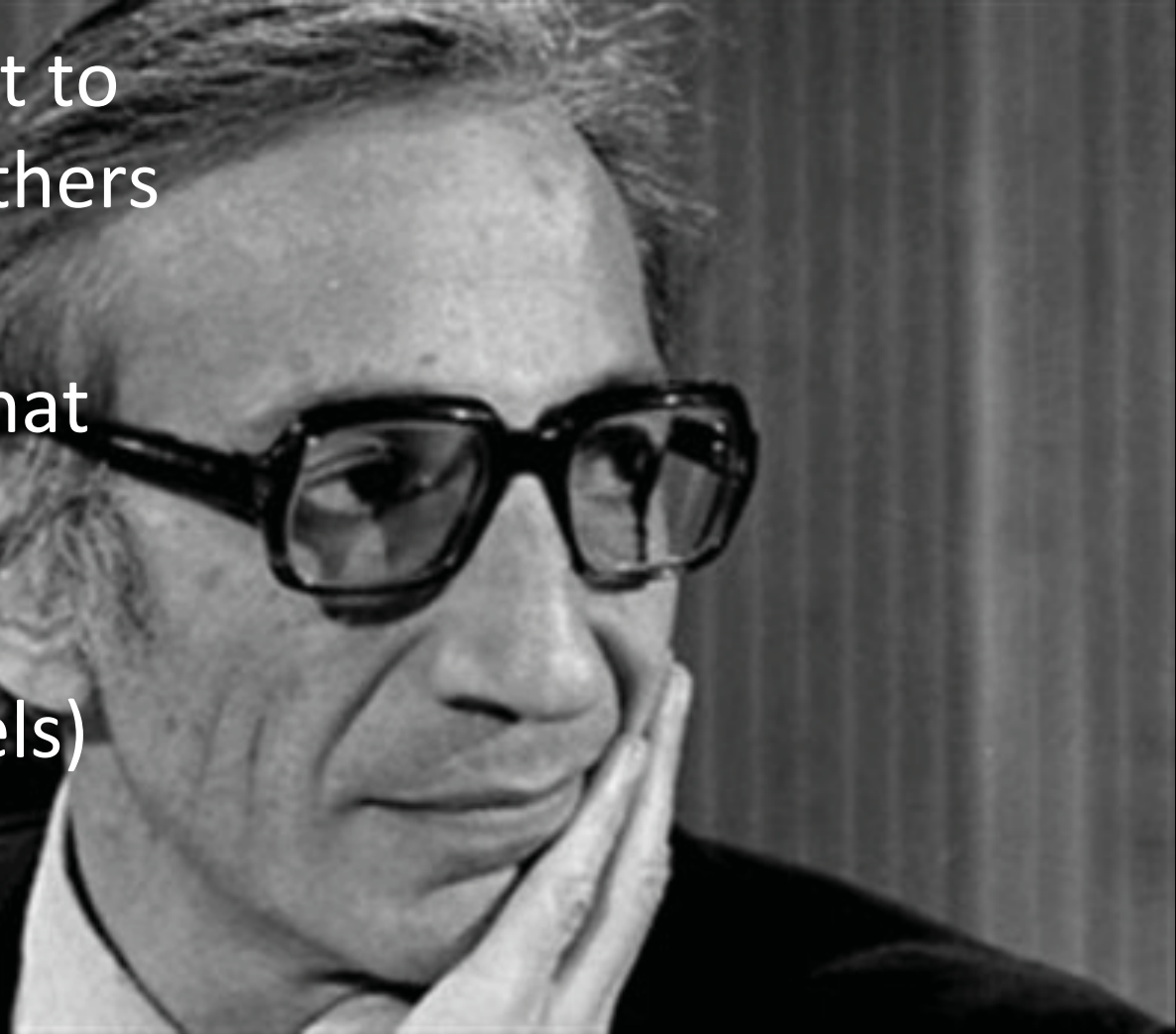
Howard Gardner

<http://www.homodiscens.com>



- Access to learning resources at any time
- Ability to connect to and learn with others
- Opportunity to publicly share what has been learnt
- Learning Webs (instead of funnels)

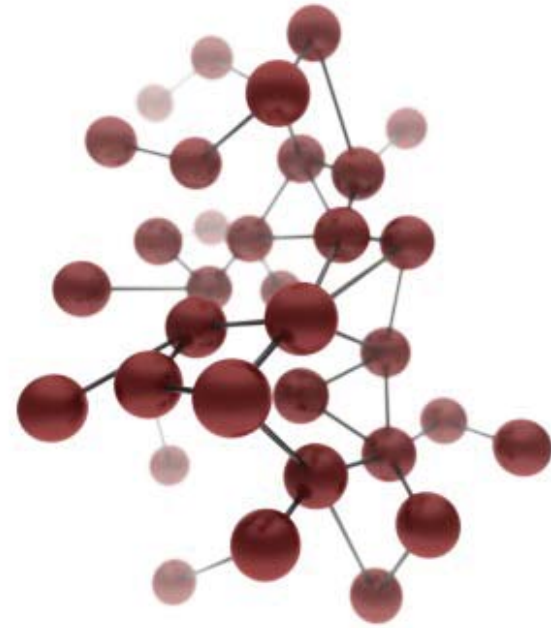
- Ivan Illich (1970)



# Learning Webs and Personal Learning Environments



<http://sm.irsd.k12.de.us>



<http://blogs.silverlight.net>

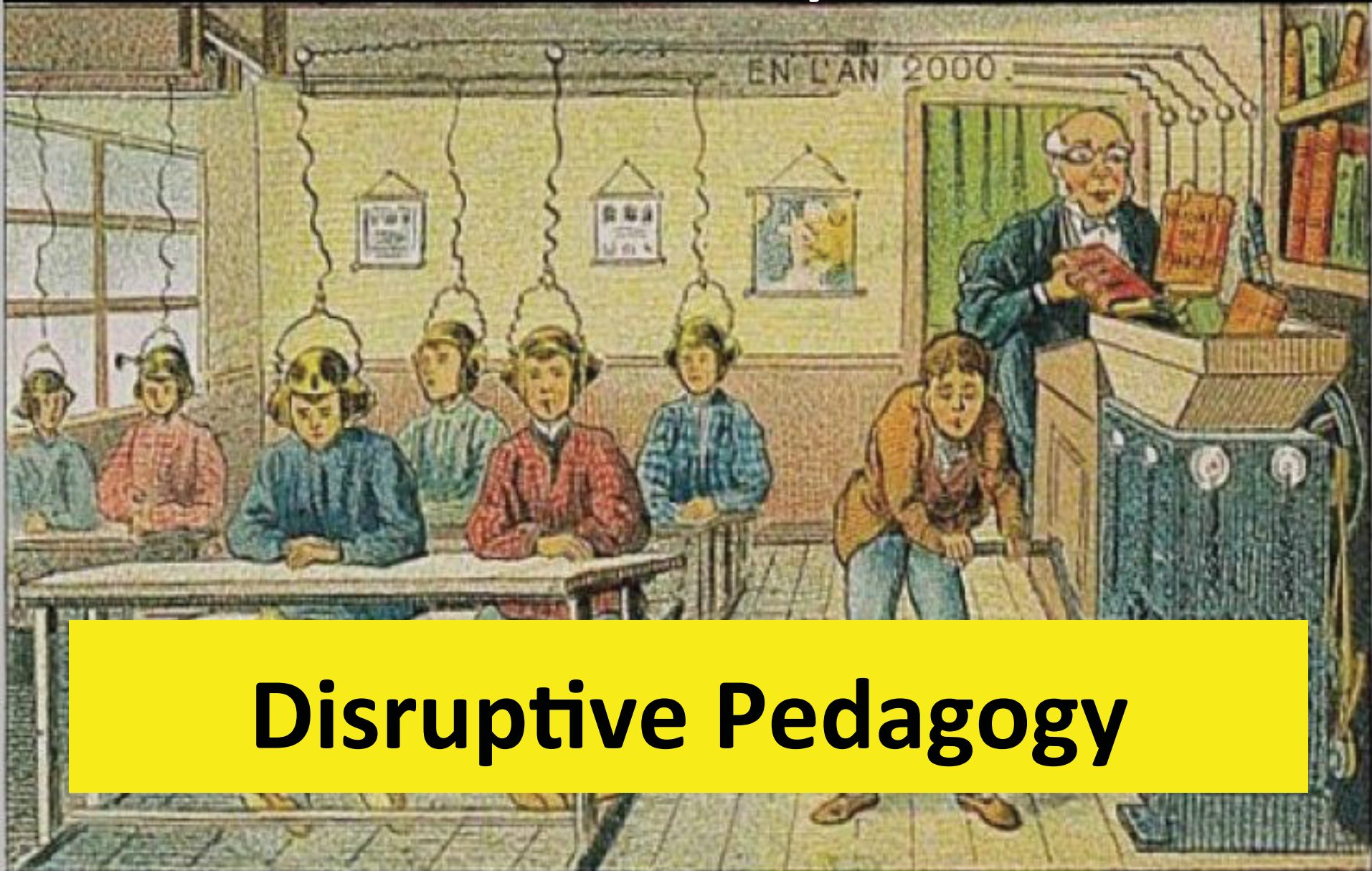
From this ....



.... to this

# New learning environme nts

# “Education in the year 2000”

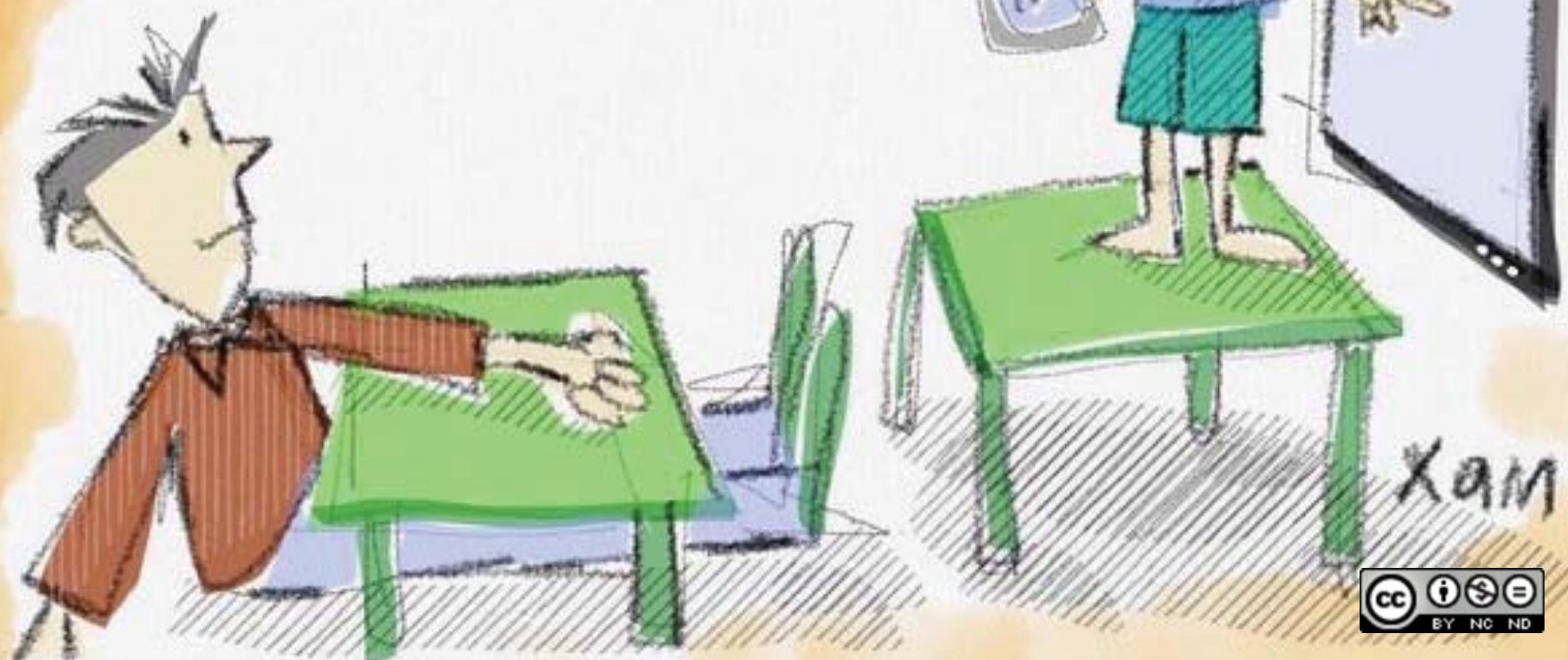


## Disruptive Pedagogy

# Flipping the classroom?



**Don't just flip the class,  
flip the teacher!**



# Social, Personal, Connected



© Steve Wheeler, University of Plymouth, 2016

Image source: <http://www.jisc.ac.uk/sites/default/files/digital-student-expectations.jpg>





# Personal Technologies

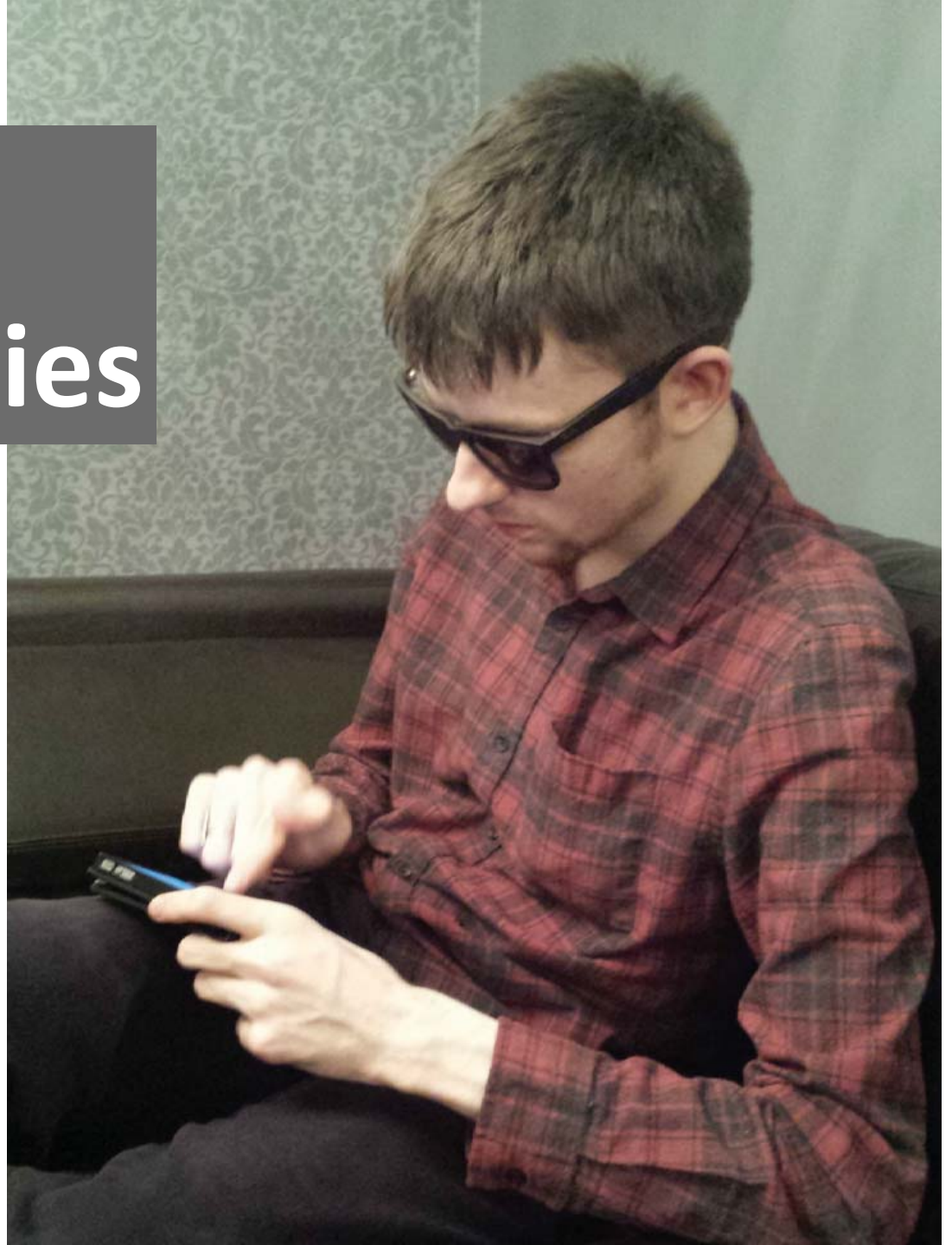
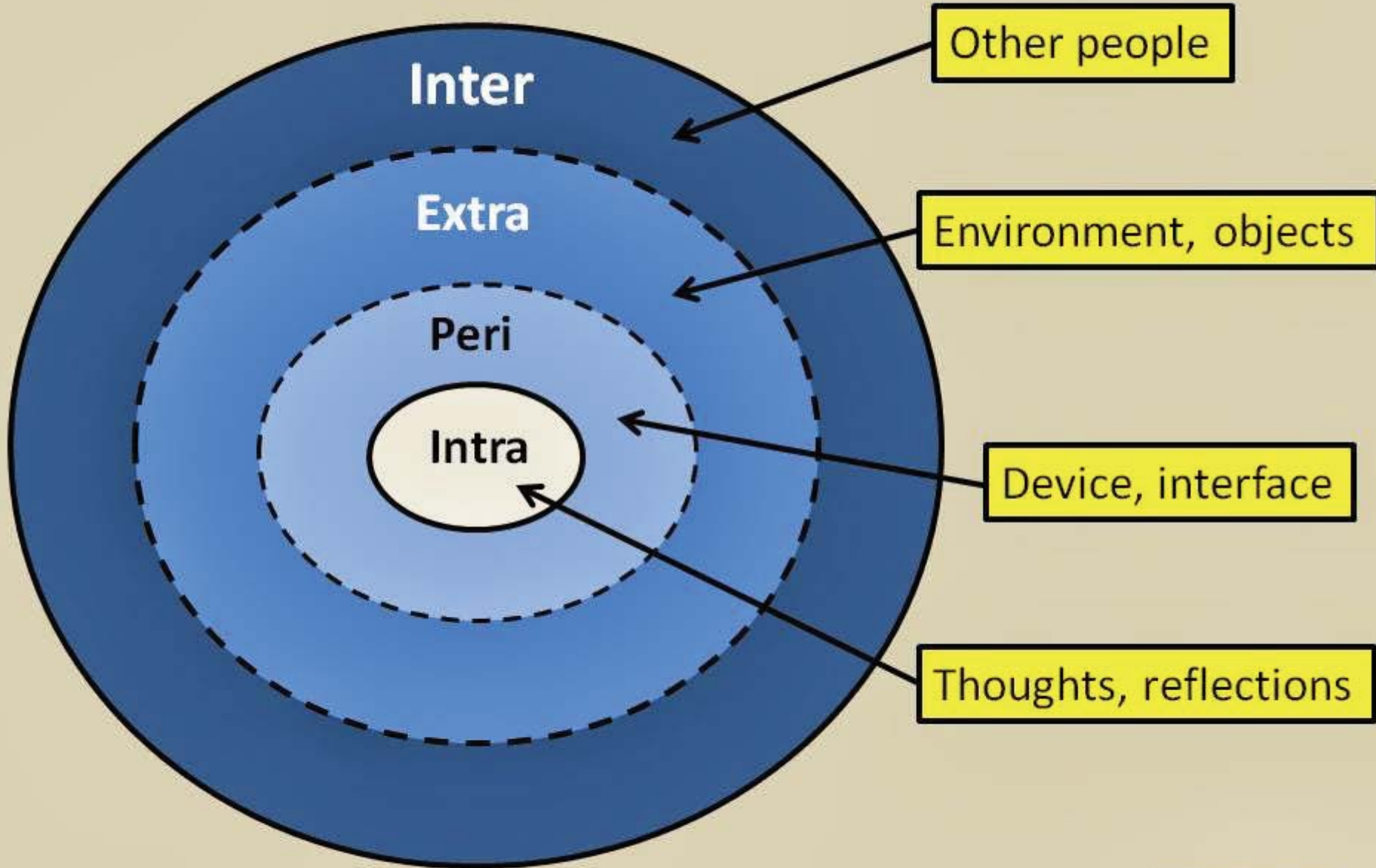




Photo: Lori Cullen

# Students taking notes

# Personal Mobile Interactions



Graphic concept by Steve Wheeler



A man with a beard and sunglasses is looking at his smartphone. He is wearing a red patterned shirt. The background is a light blue sky.

## Membership of ‘the Tribe’

*“Where digital communication has fractured the tyranny of distance, and computers have become pervasive and ubiquitous, **identification** through digital mediation has become the new cultural capital”.*

Wheeler (2009)



Photo by Steve Wheeler



# Professional Learning Networks

# Engaging learners

# 'New' learners are...

- more self-directed
- better equipped to capture information
- more reliant on feedback from peers
- more inclined to collaborate
- more oriented toward being their own “nodes of production”.

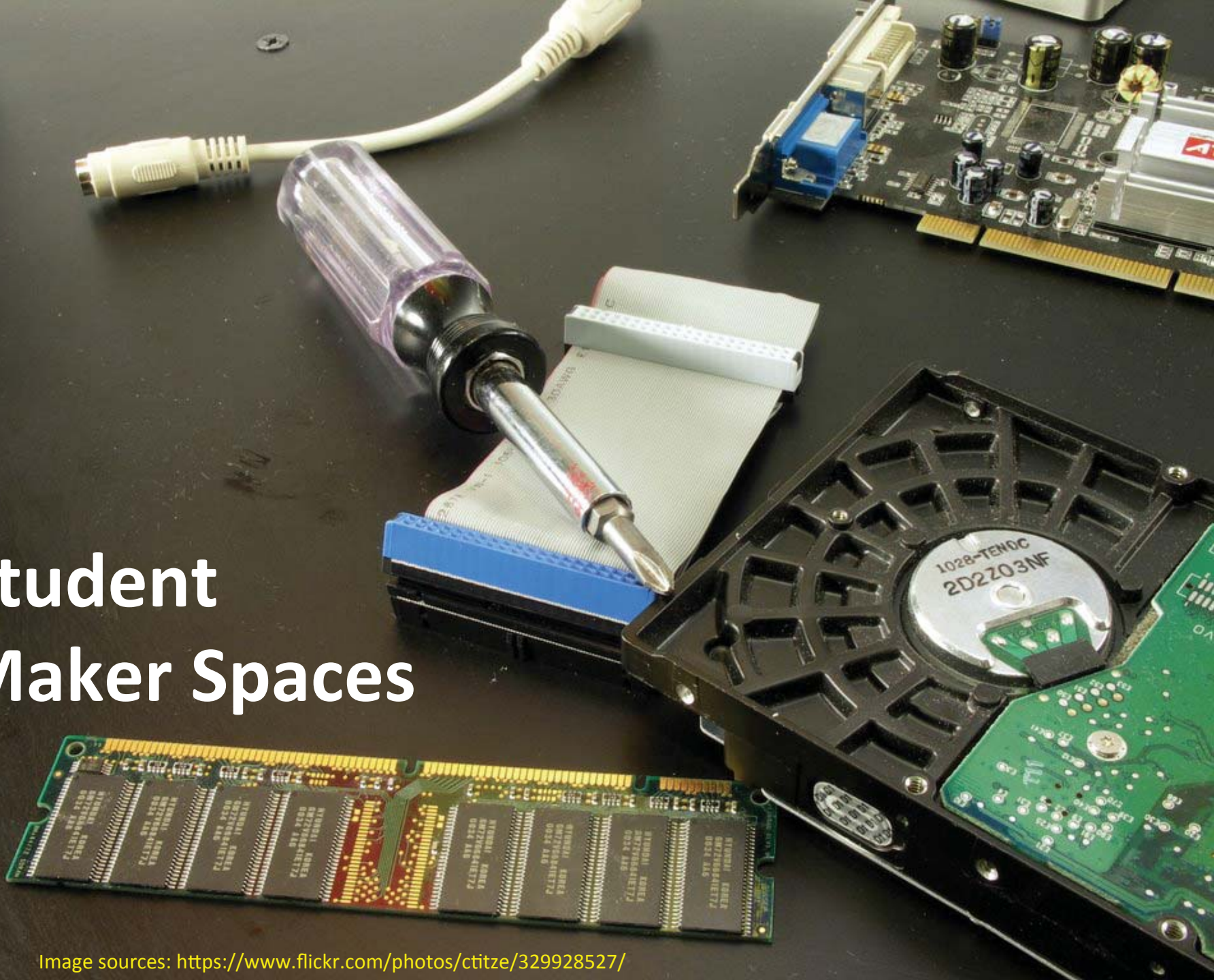
*Education Trends | Featured News*  
**John K. Waters**—13 December 2011



**We learn by making (Papert, 1960)**



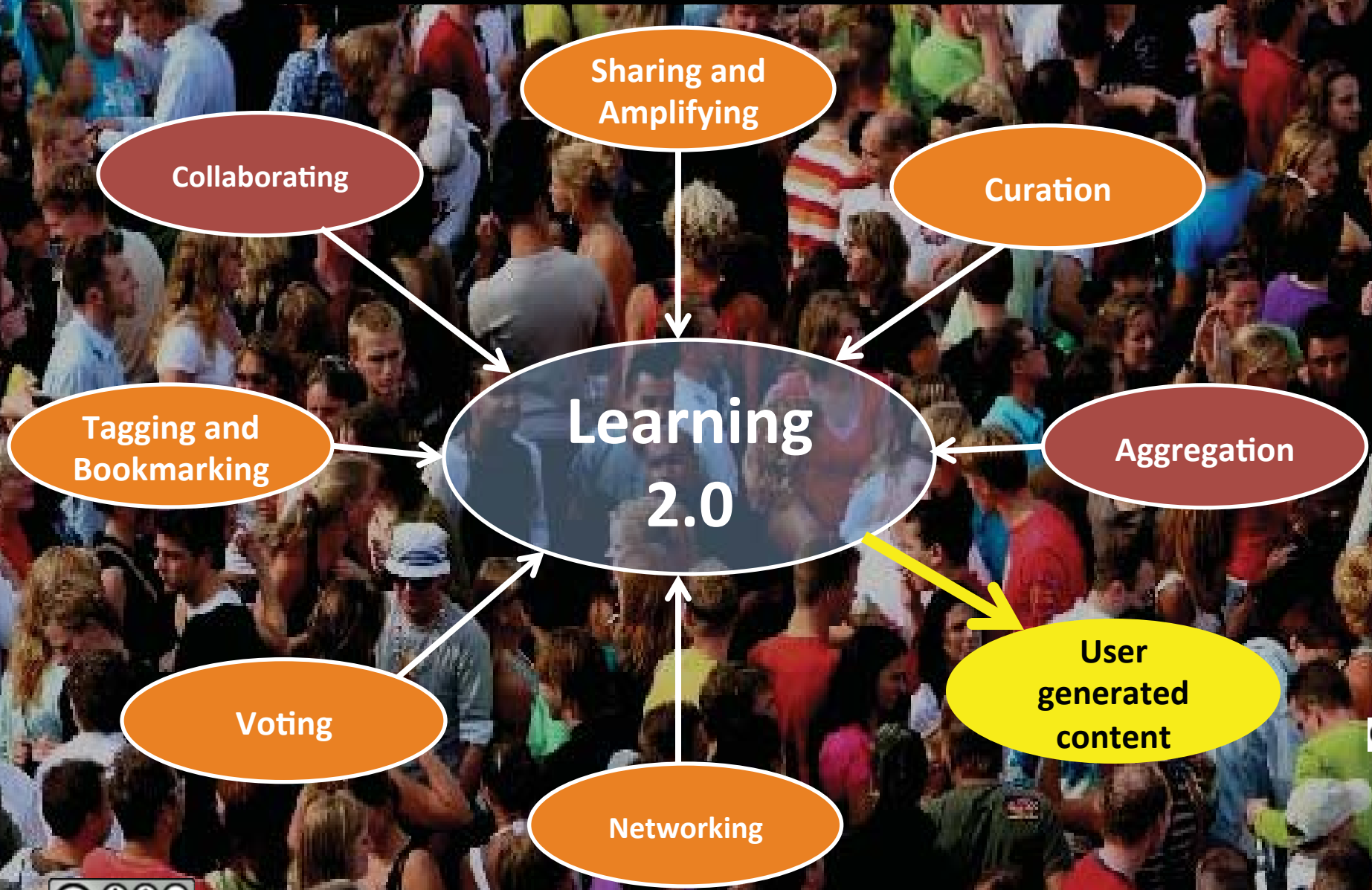
# Student Maker Spaces



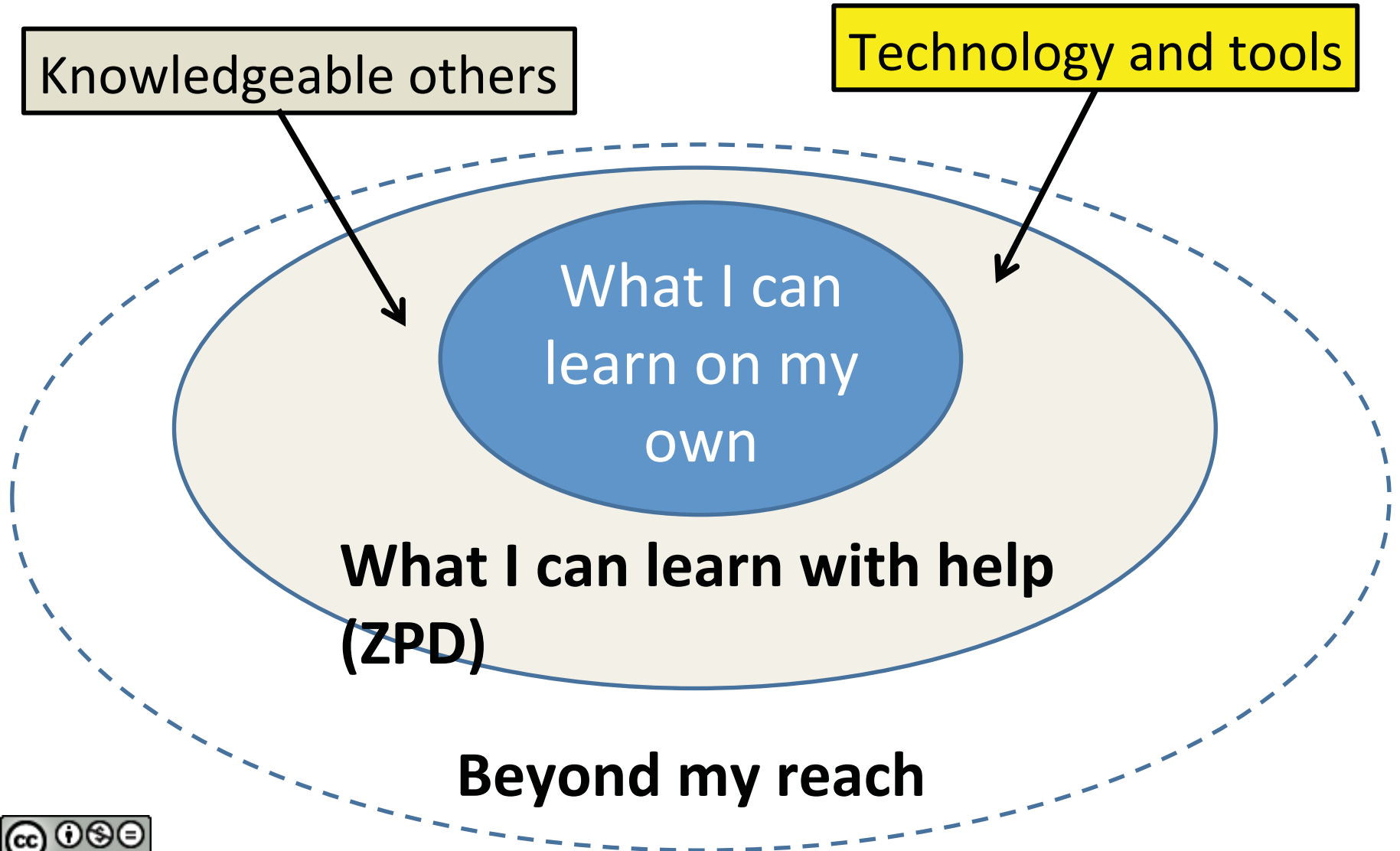
***‘In the act of writing, we are written.’ – Daniel Chandler***



# Architecture of participation

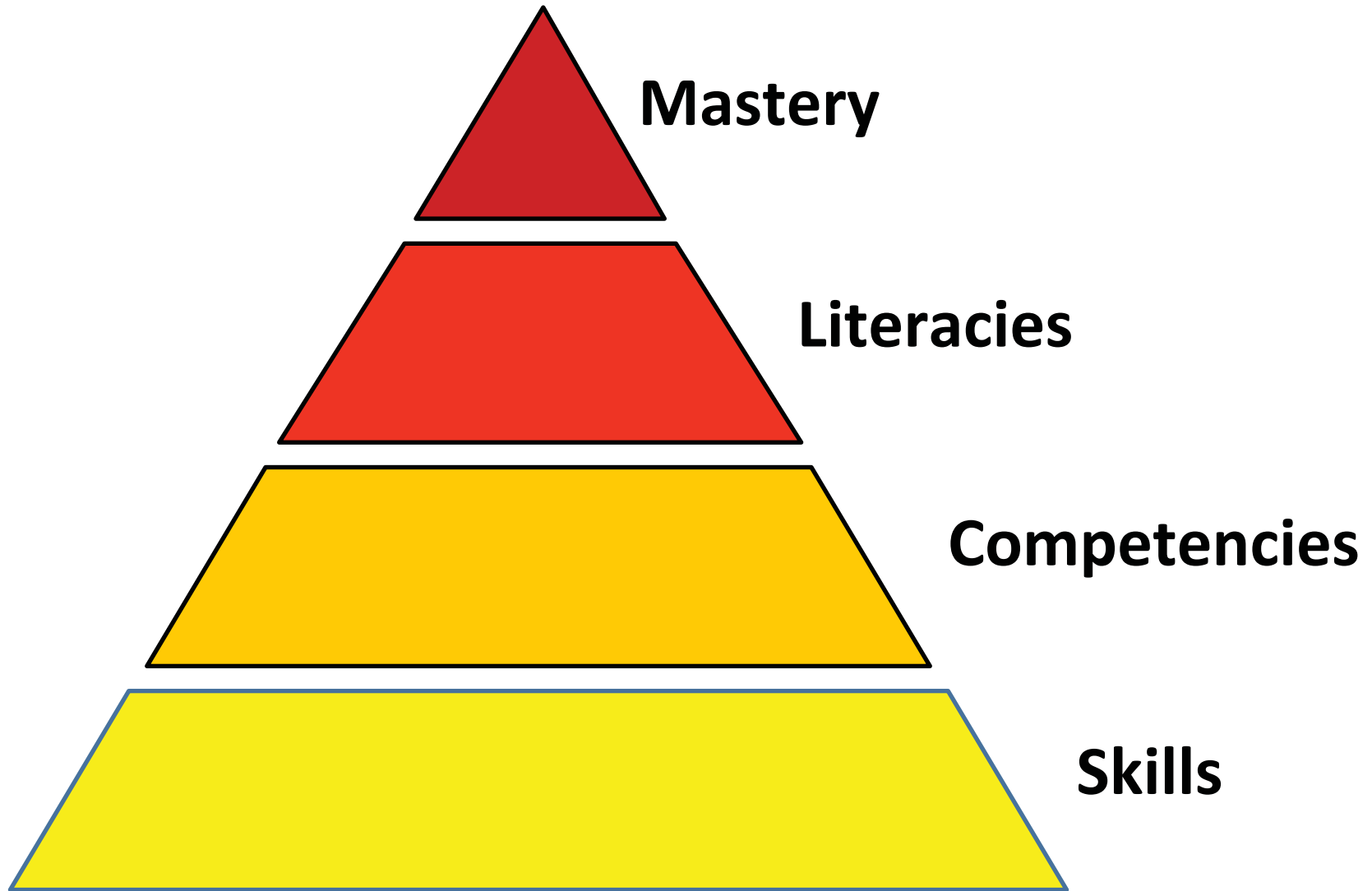


# ZPD and scaffolding



# New literacie s

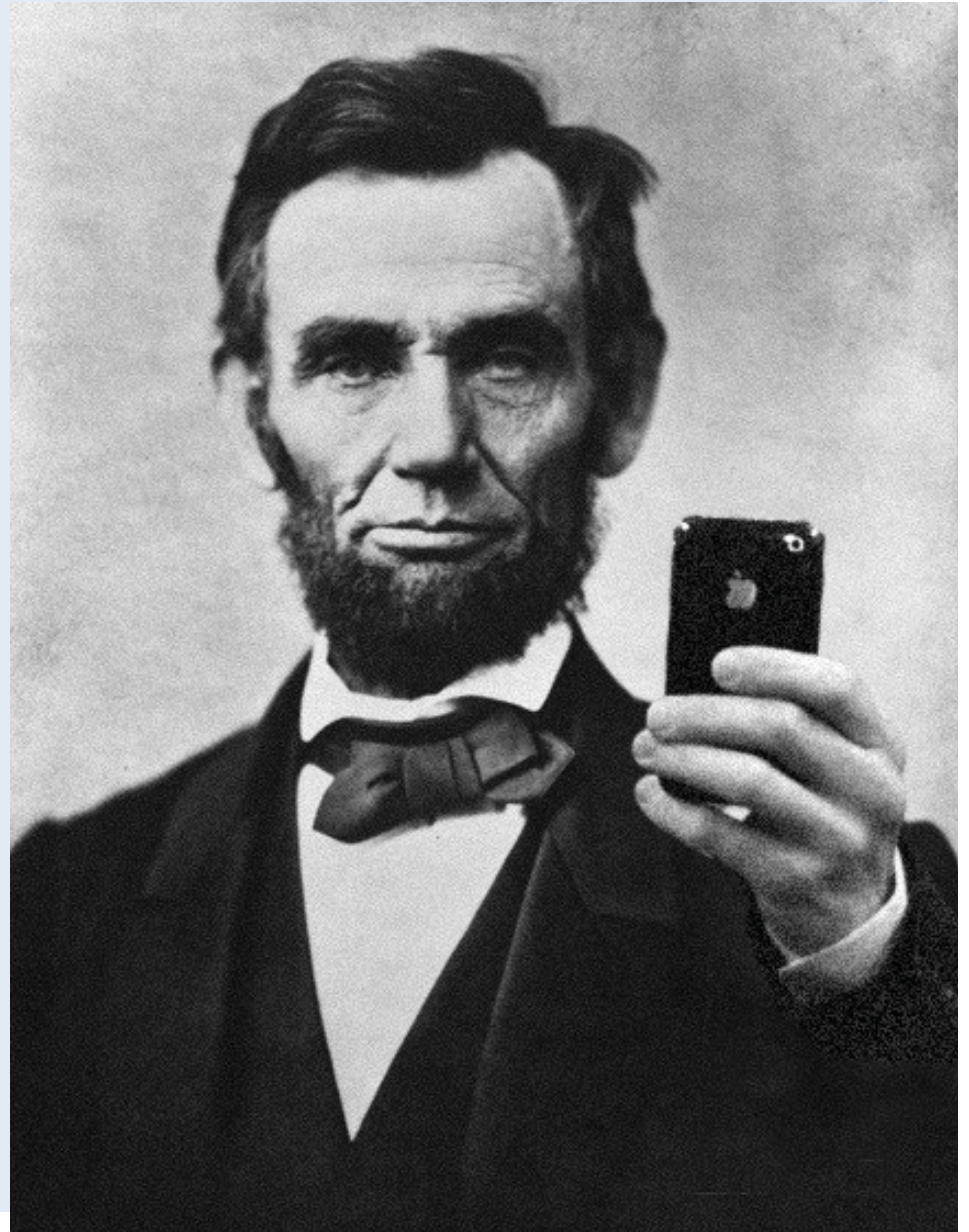
# Learning 2.0 – Digital Literacies



# Learning Unlearning Relearning

***“Nearly all men  
can stand  
adversity, but if  
you want to test a  
man's character,  
give him an  
iPhone.”***

**- Abraham Lincoln  
on the ‘selfie’**

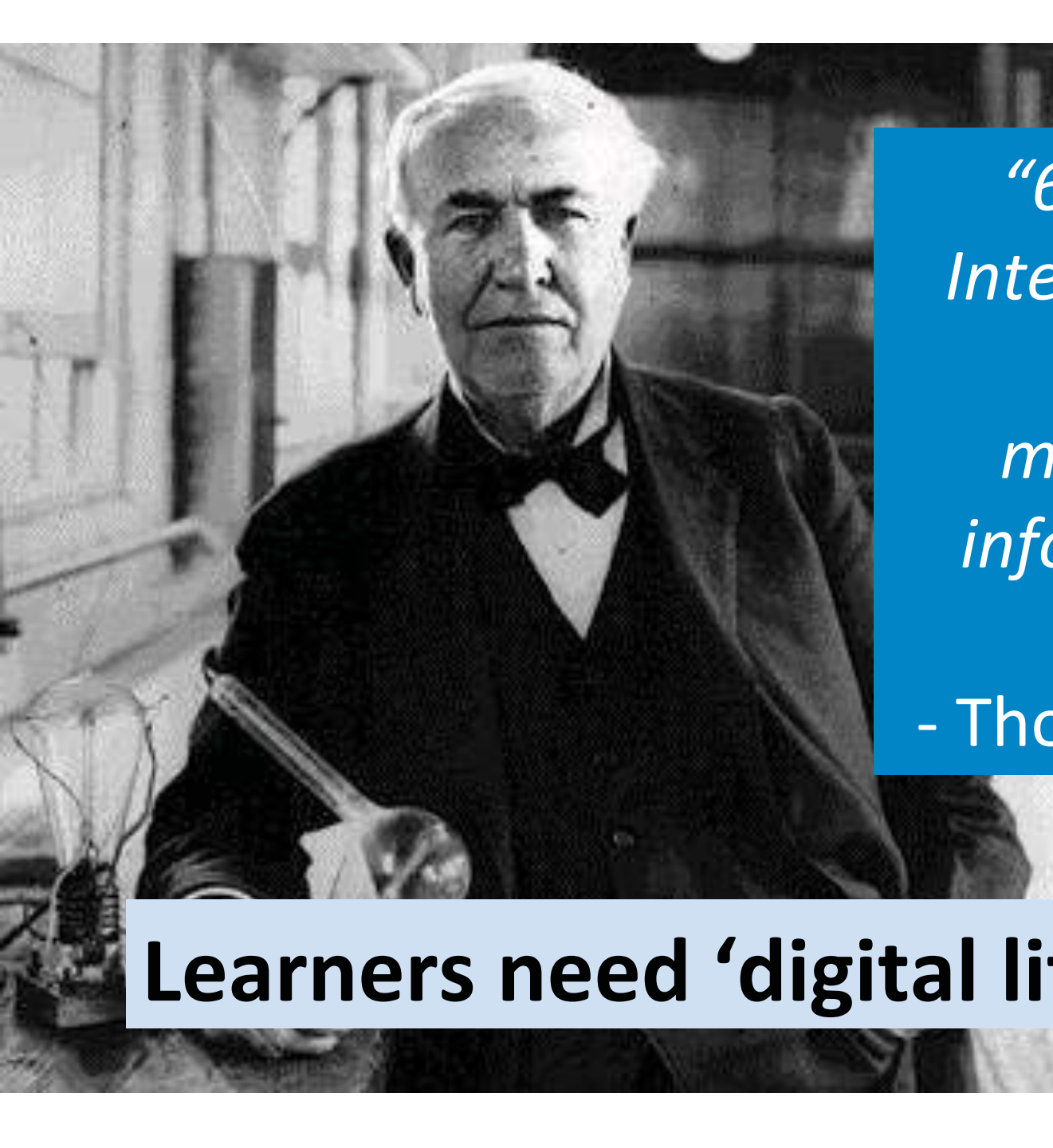


© Steve Wheeler, University of Plymouth, 2016



<http://thesocietypages.org/cyborgology>





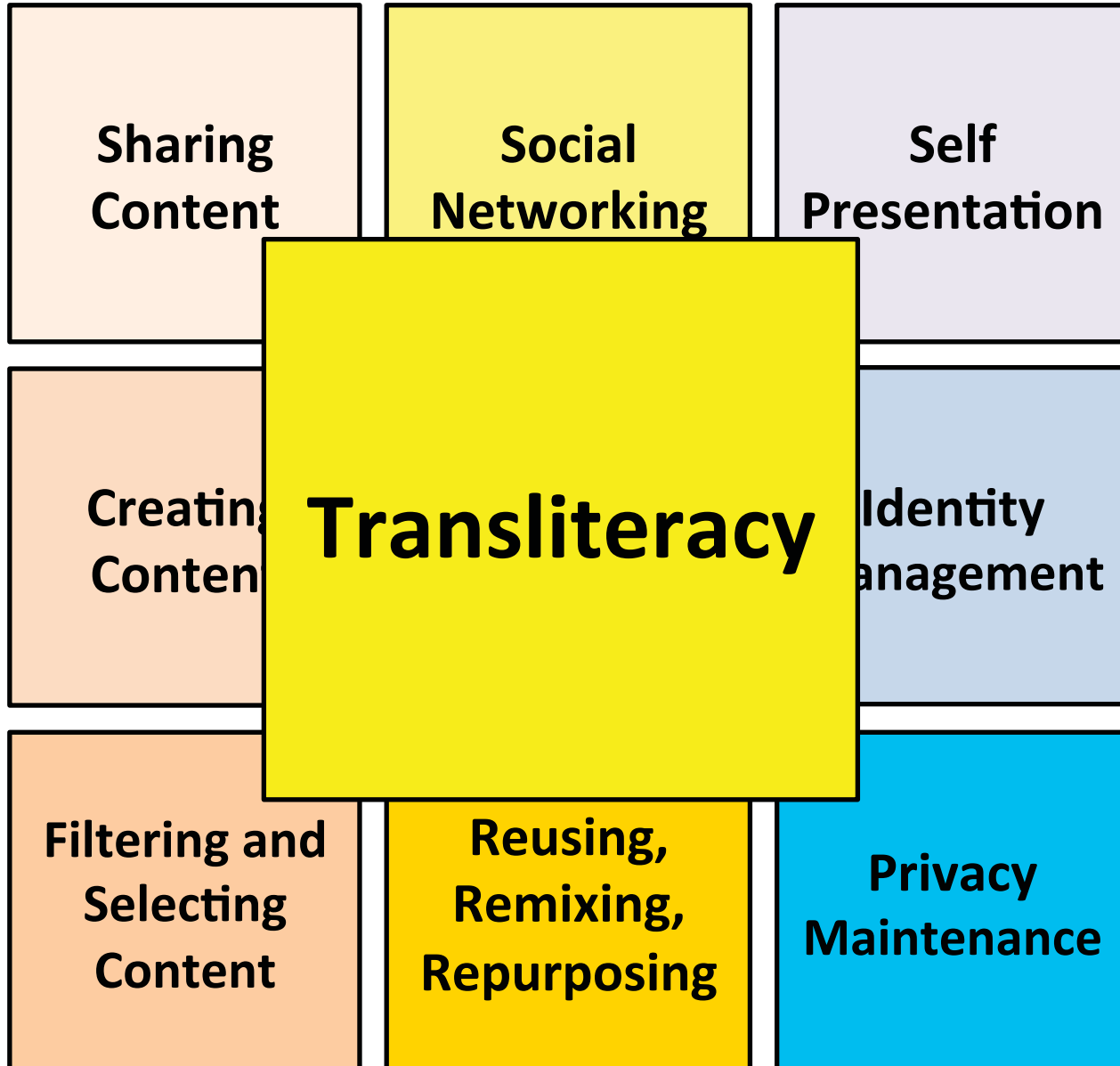
*“60% of all  
Internet pages  
contain  
misleading  
information.”*

- Thomas Edison

**Learners need ‘digital literacies’**

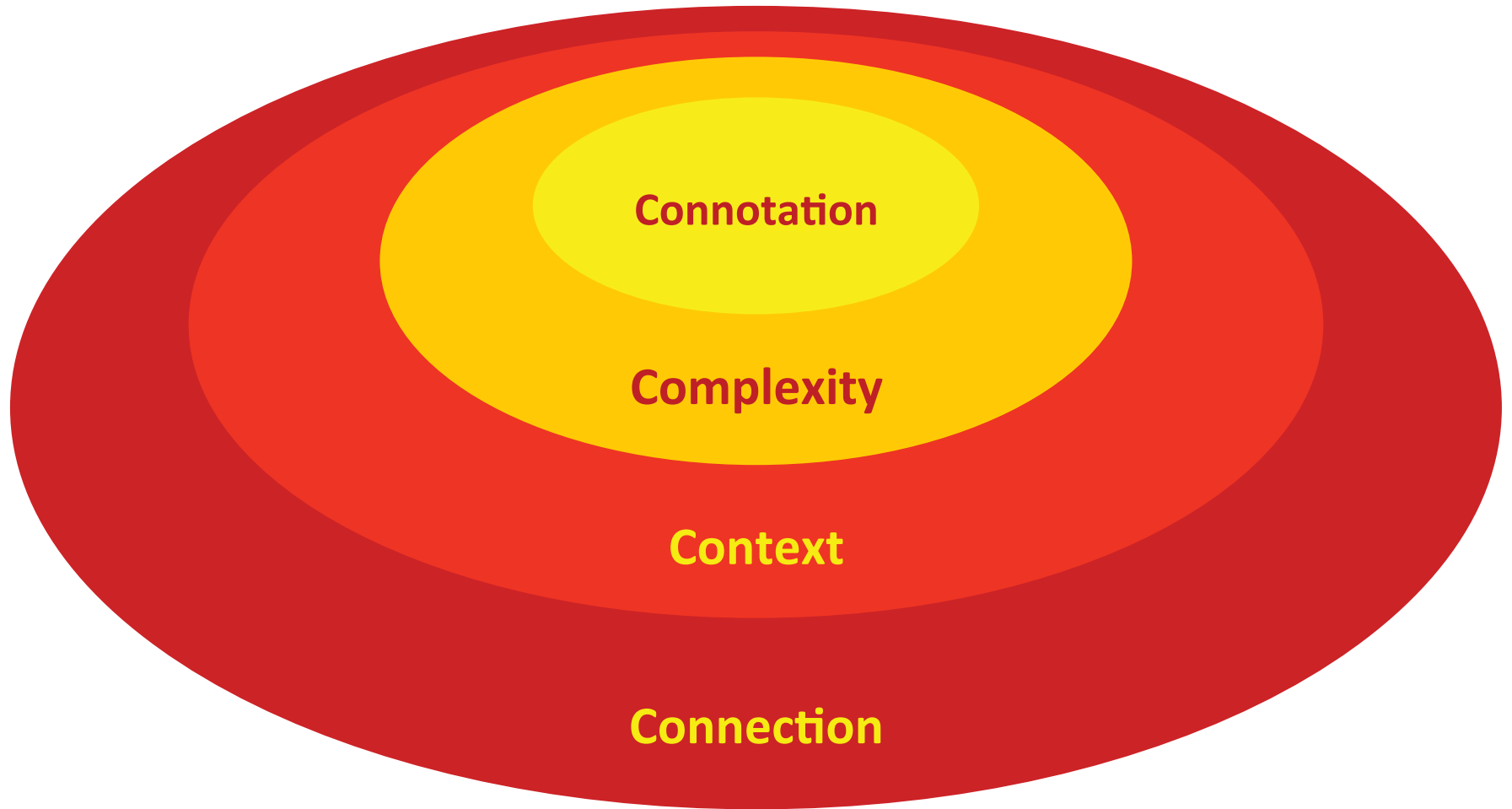
# Social Dimension

Knowledge Management Dimension

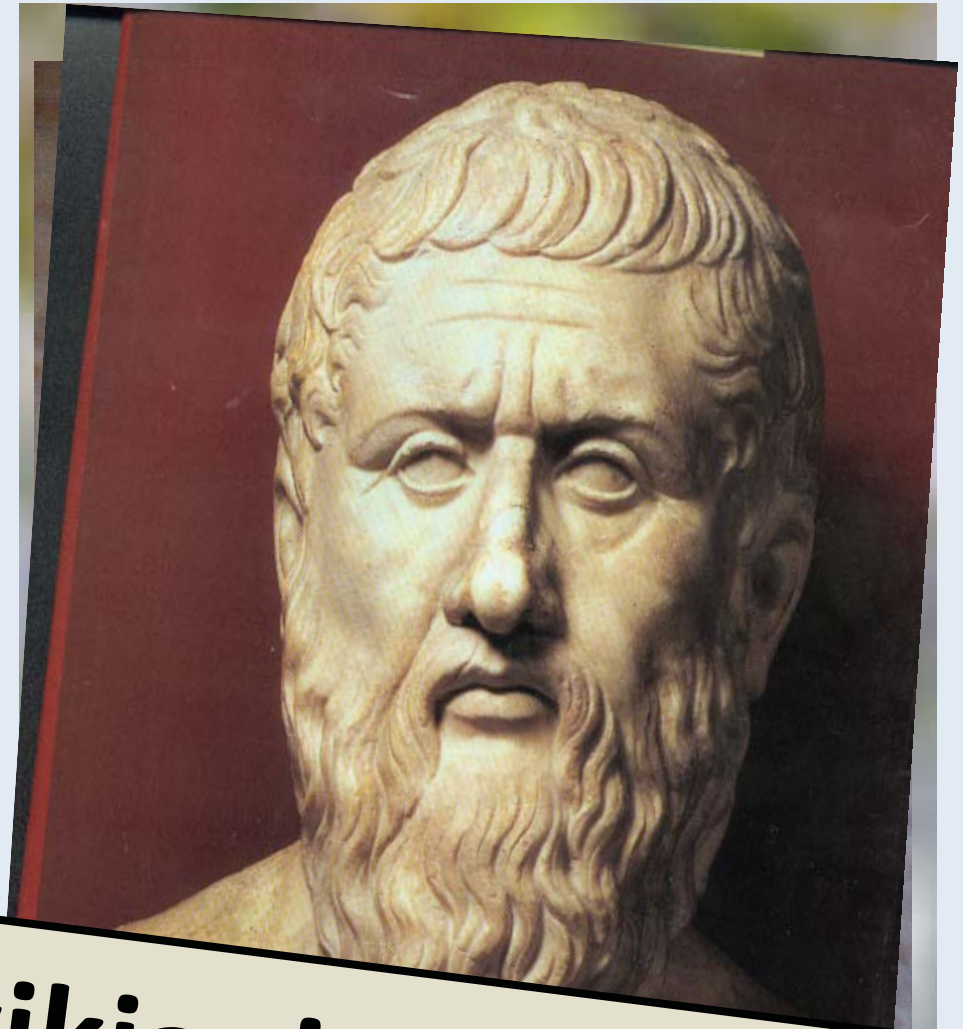


Personal Dimension

# Skills for Learning 2.0



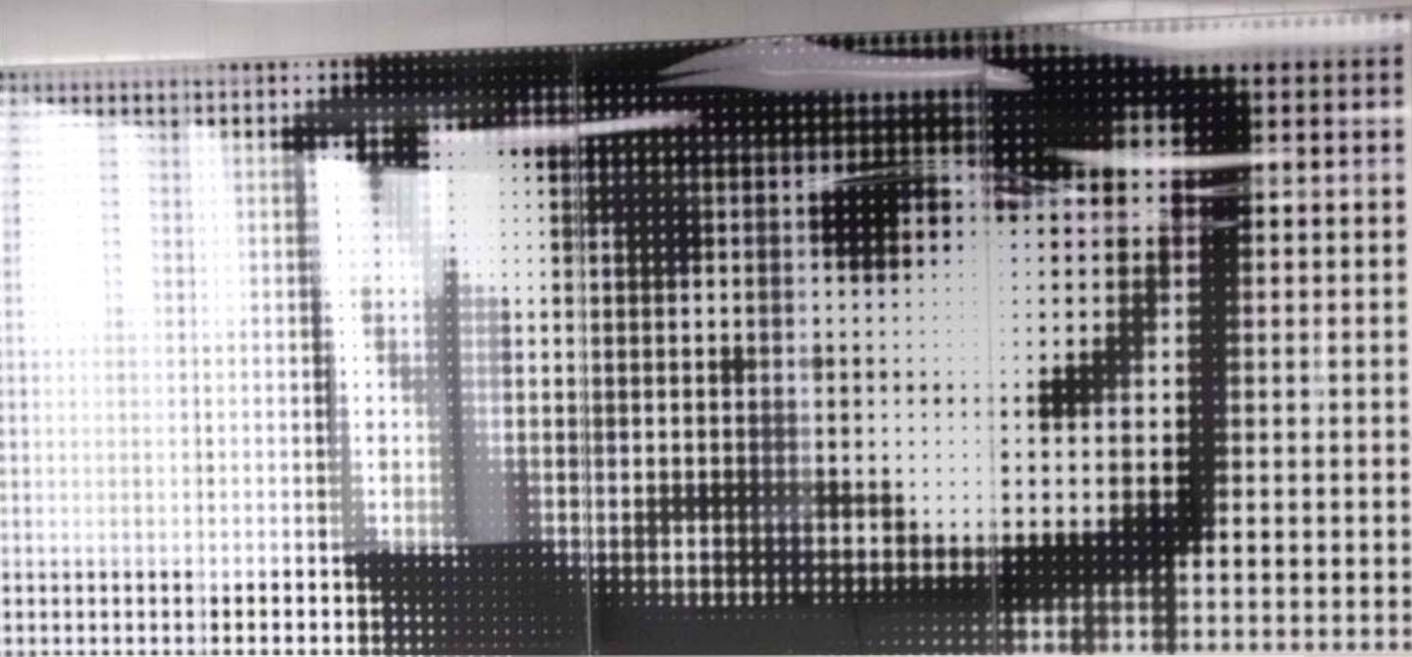
*“Knowledge that  
is acquired under  
compulsion  
obtains no hold  
on the mind.”*



# **Darwikianism**

Bust of Plato

<http://www.fotopedia.com/items/flickr-713124904>



# Thank you

W: <http://steve-wheeler.net>

E: [swheeler@plymouth.ac.uk](mailto:swheeler@plymouth.ac.uk)

B: <http://steve-wheeler.co.uk>

T: [@timbuckteeth](#)

