



AALBORG UNIVERSITY
COPENHAGEN

UNDERVISNINGENS DAG 2019

TEACHING DAY 2019

PBL 2.0 | STUDIEINTENSITET

PBL 2.0 | STUDY INTENSITY



AALBORG UNIVERSITET

UNDERVISNINGENS DAG PROGRAM

| | |
|-------------|---|
| 08:00-08:45 | Registration and coffee |
| 09:45-09:00 | Welcome and introduction by Prorector Inger Askehave and the organisers |
| 09:00-10:00 | Keynote I: PBL 2.0: Enhancing Studying and Students' Learning in a Digital Age Dr. Tony Bates, Canada |
| 10:00-11.55 | Keynote II: The Digital Transformation of PBL Prof. Jan Damsgaard |
| 10:55-11:15 | Short break |
| 11:15-11:45 | Q&A Session with both keynote speakers |
| 11:45-11.50 | Energizer |
| 11:50-12:30 | Inspirational talk by Teacher of the Year (winner of The Obel Family Foundation award for excellent teaching) |
| 12:30-13:30 | Lunch |
| 13:30-15:30 | Parallel workshops |
| 15:45-16:30 | Poster session and drinks |

TEACHING DAY



PBL 2.0

AAU

8 May, Copenhagen; 9 May, Aalborg; 2019



PBL 2.0: Enhancing studying and students' learning in a digital age

Dr. Tony Bates

Distinguished Visiting Professor

The G. Raymond Chang School of Continuing Education

Ryerson University

Overview

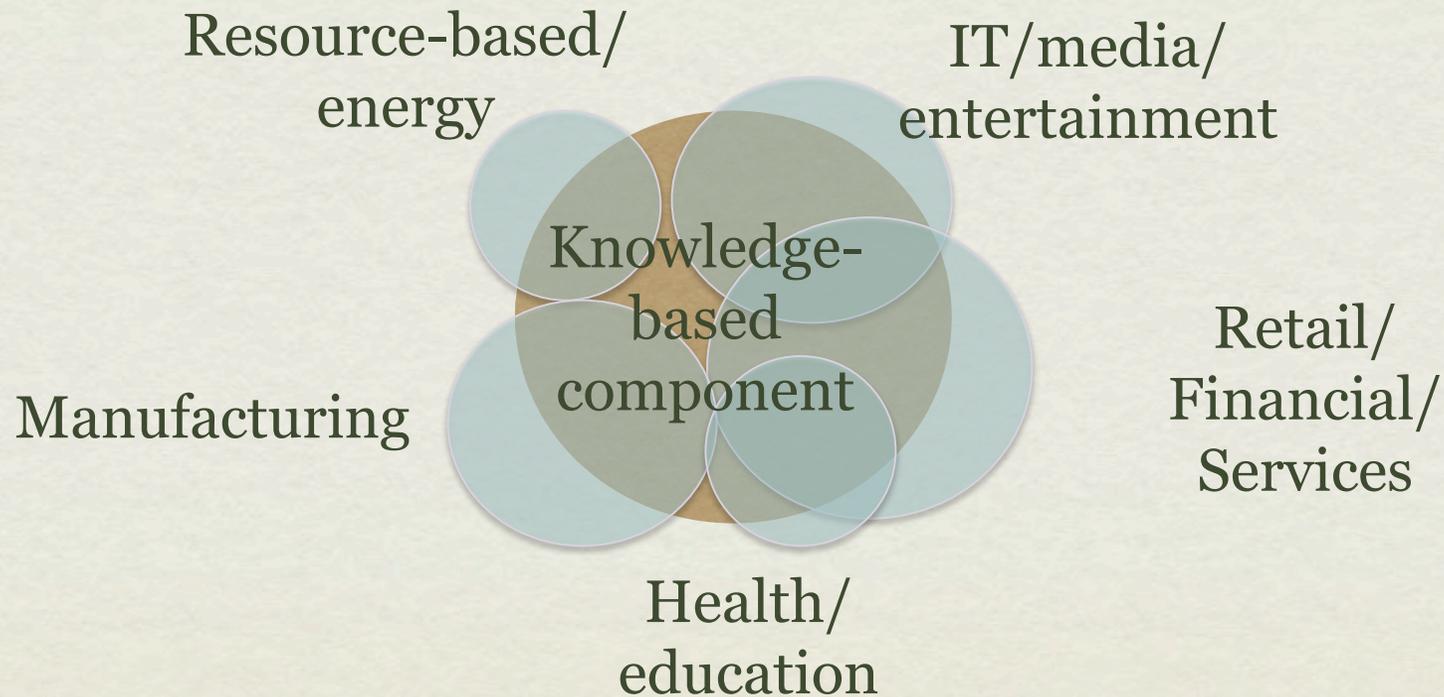
1. Changing economy, changing needs
2. Importance of 'soft' skills and what we know about skills development
3. The role of online learning and PBL in skills development
4. Implications for design of teaching
5. Conclusions



1. Key forces of change:

a. Demands of a digital economy

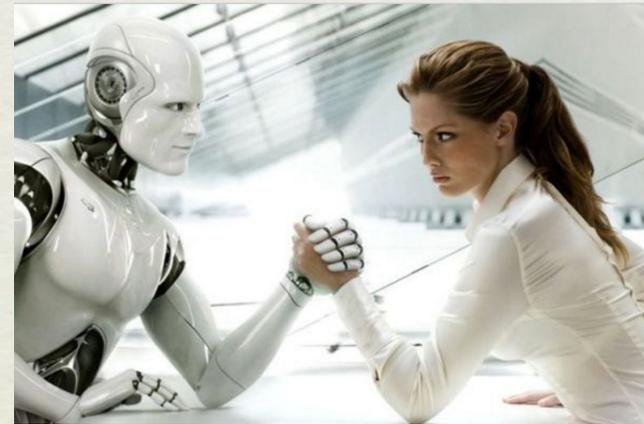
Where will the jobs be?



1. Key forces of change

Demands of a digital economy

- Changing workforce; new work and new knowledge/skills
- Report from RBC based on analysis of new job postings
- Impact of automation and AI on jobs and work
- There is a future for jobs; but we're not preparing learners properly



1. Key forces of change

Demands of a digital economy

- Within 10 years, 50% of jobs will require new skills
- Digital competency essential for all jobs: NOT coders/programmers but digital thinkers
- Human skills to bridge technology and humanity: e.g. Facebook
- Constant change in work



1. Key forces of change

b. What are 21st century skills?

Conference Board of Canada:

communication skills

independent learning

ethics/responsibility

teamwork and flexibility

thinking skills (critical thinking,
problem-solving, creativity)

IT skills embedded in subject area

knowledge management

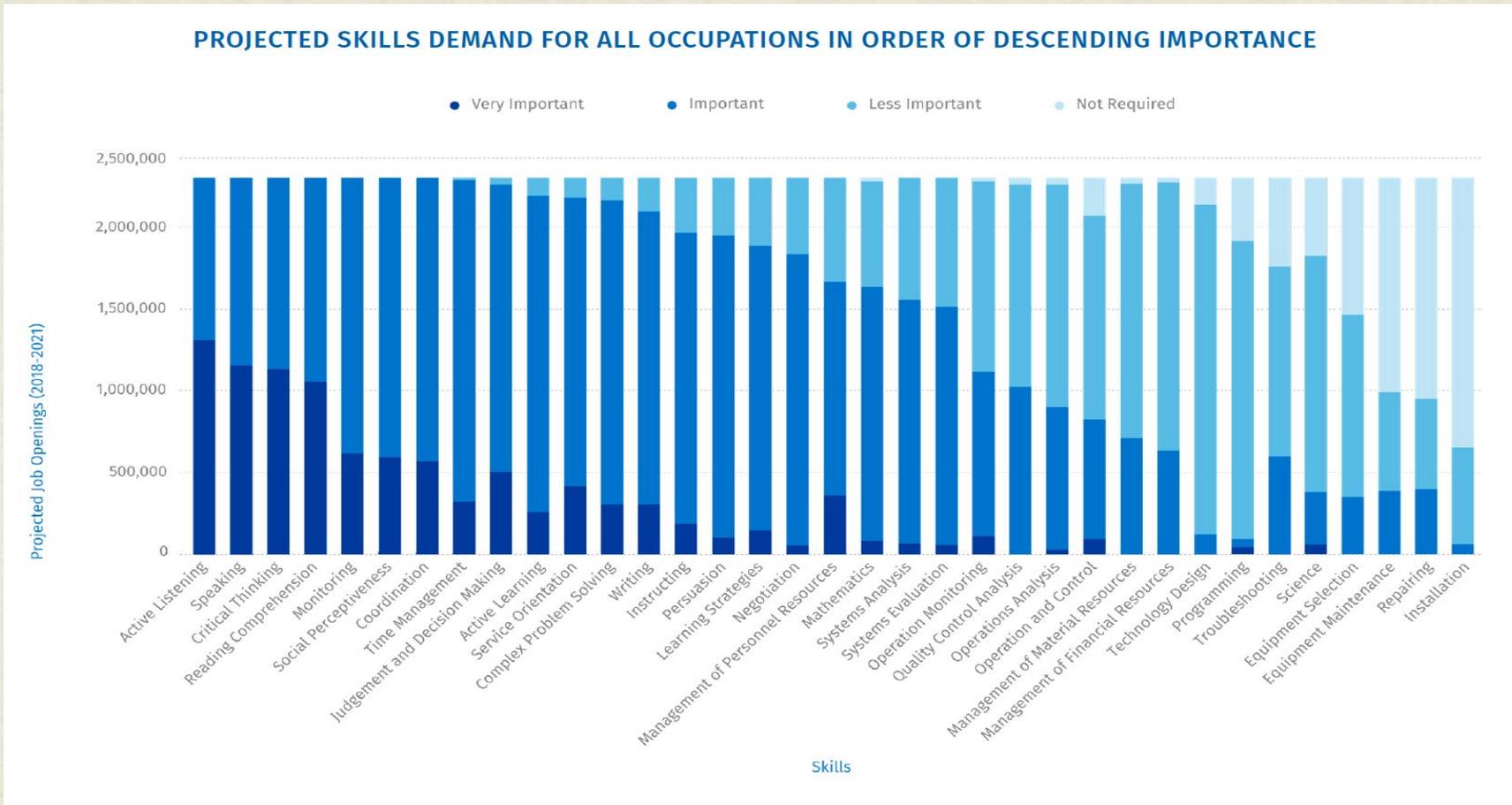


A small start-up in automotive design

1. Key forces of change

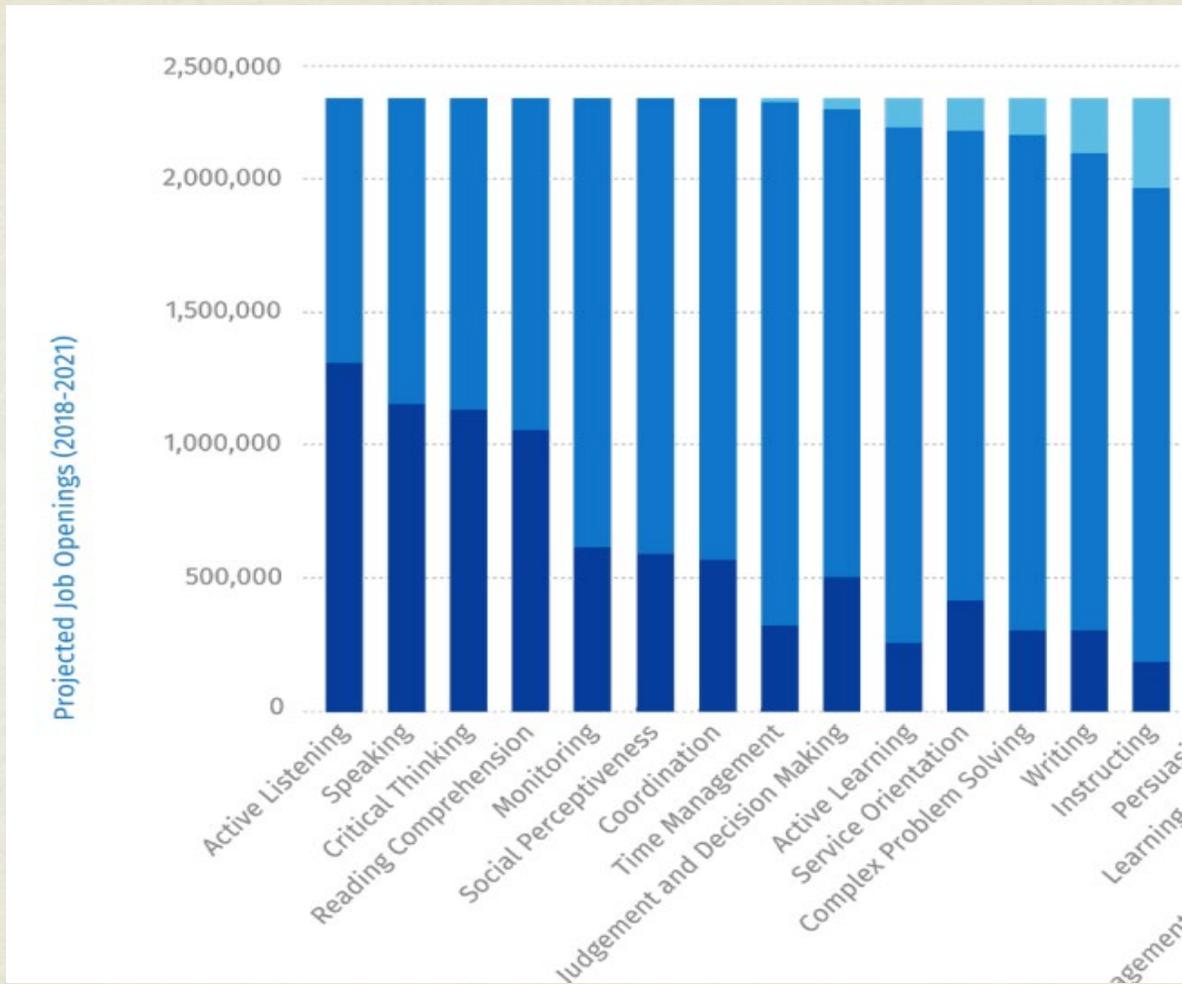
b. Skills in demand

Royal Bank of Canada study:



1. Key forces of change

b. Skills in demand: most

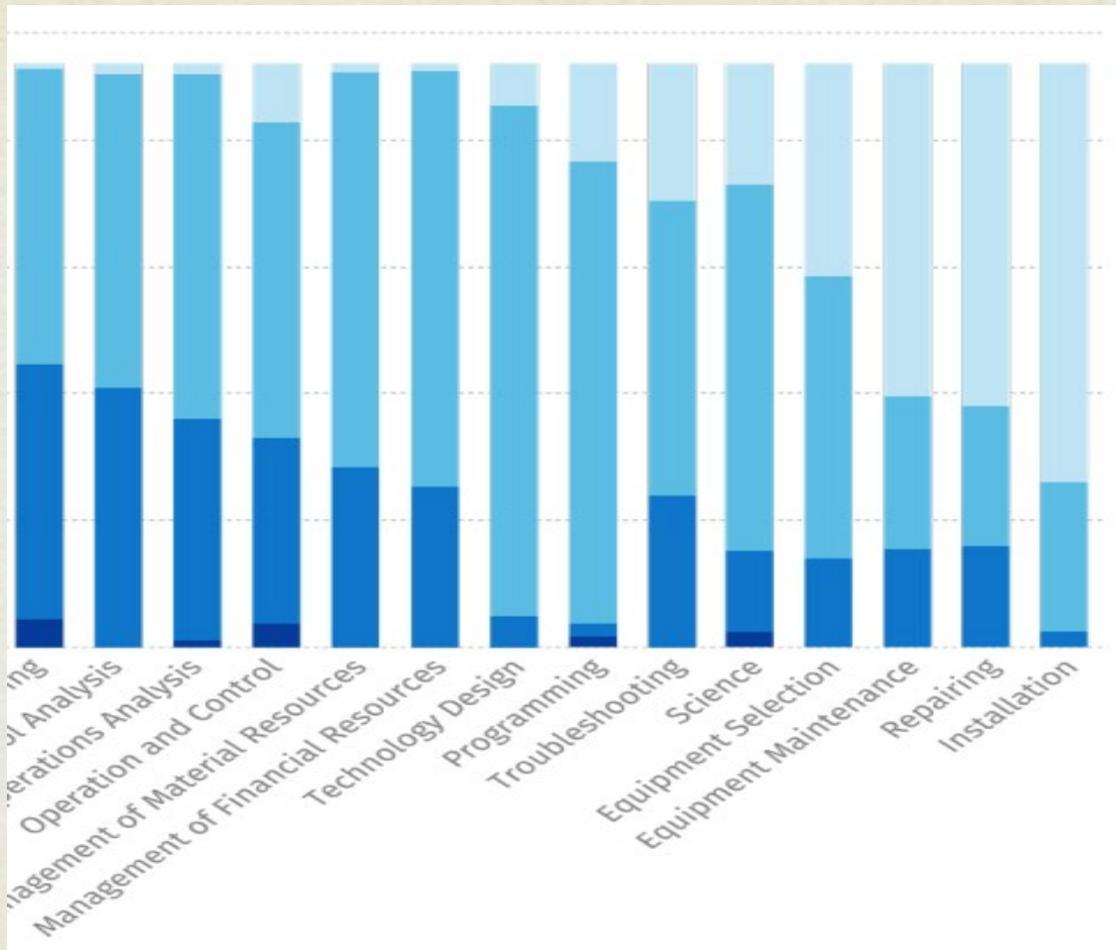


Royal Bank of
Canada
'Humans Wanted'

- very important
- important
- less important
- not required

1. Key forces of change

b. Skills in demand: least



Royal Bank of
Canada
'Humans Wanted'

- very important
- important
- less important
- not required

What we know about skills development

- Content = facts, ideas, principles: 'knowing'
- Skills = understanding, analysing, evaluating, applying: 'doing'
- Both necessary in today's society
- BUT: content has been the traditional priority



What we know about skills development

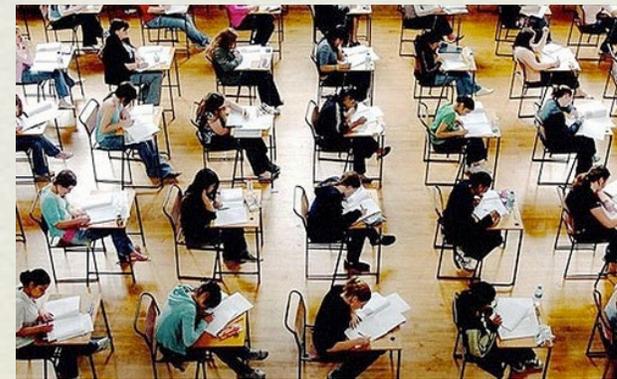
We know a lot about how to teach skills:

- Context-specific
- Learners need lots of practice
- Small steps initially
- Regular feedback from expert
- Develop over a lifetime rather than one course



What we know about skills development

- How do you develop skills?
What teaching methods?
- Relationship between content and skills?
- What role can technology play in developing and assessing skills?
- What do we assess – and how?
- Skills require specific methods of teaching



What teaching methods for skills development?

- Discussion, social learning for testing and developing ideas
- Problem-based learning
- Experiential learning
- Communities of practice
- Competency-based learning
- Knowledge management
- Not dependent on mode of delivery



Role of online learning in skills development



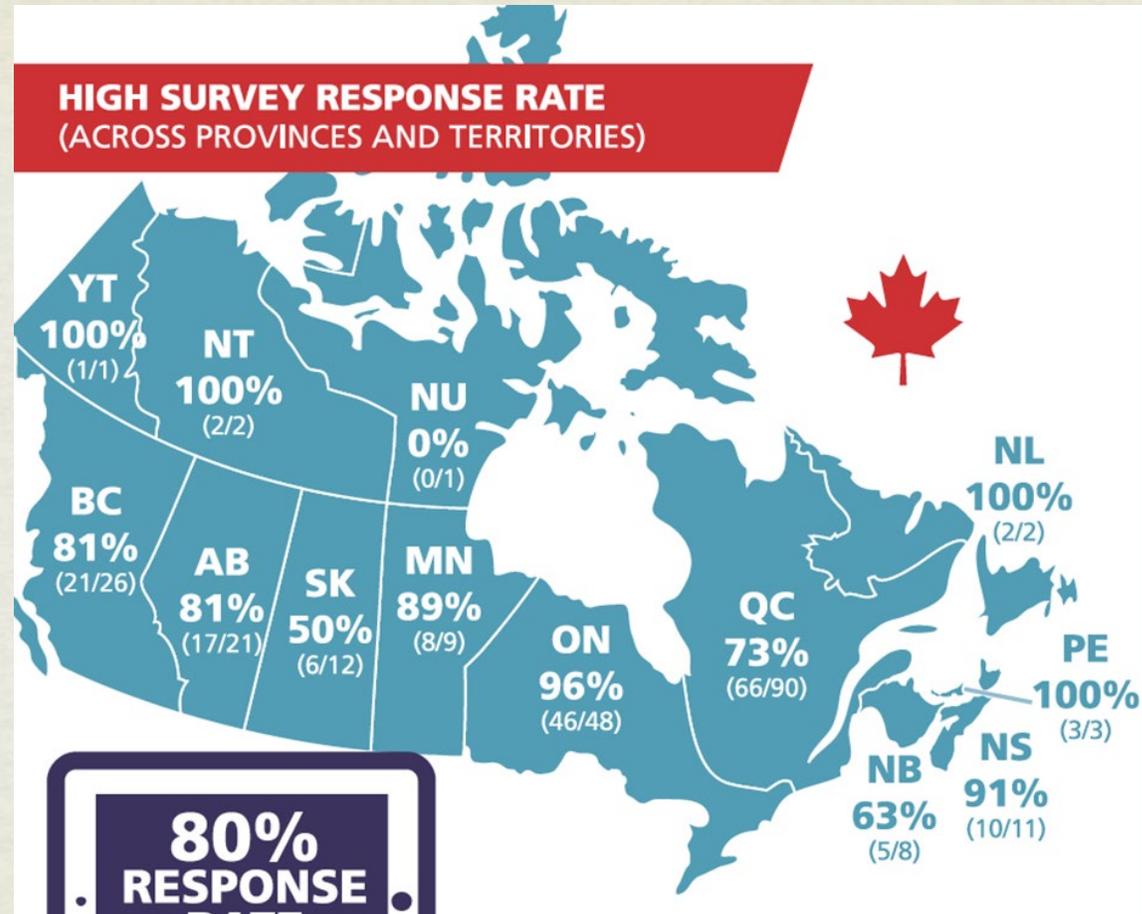
← blended →

fully online

face-to-face **classroom** **flipped** **hybrid** (distance)
aids

← no technology (mode of delivery) all technology →

The 2018 National Survey of Online Learning in Post-Secondary Education



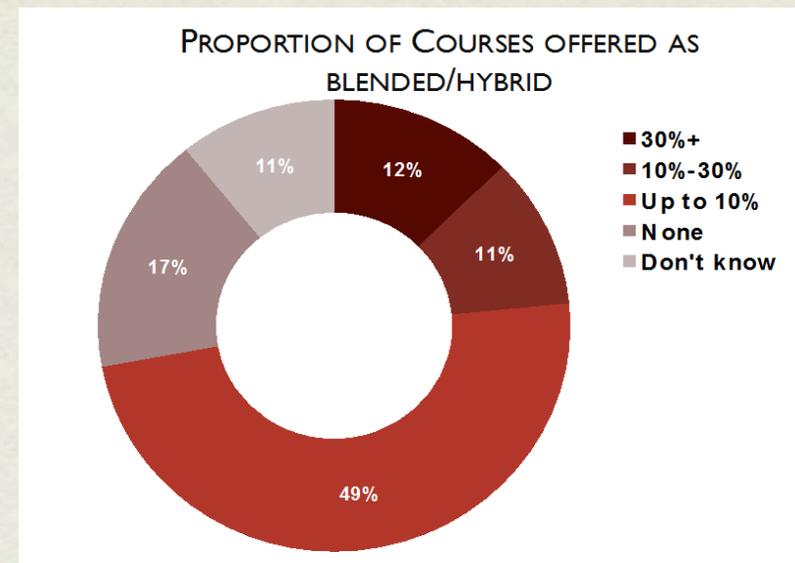
Main results: fully online (distance)

- Online learning mature market in Canada
- Fully online courses: almost all universities; and all colleges outside Québec; 43% within Québec
- 8% of all course registrations are in fully online courses: 1.3 million



Main results: Hybrid learning

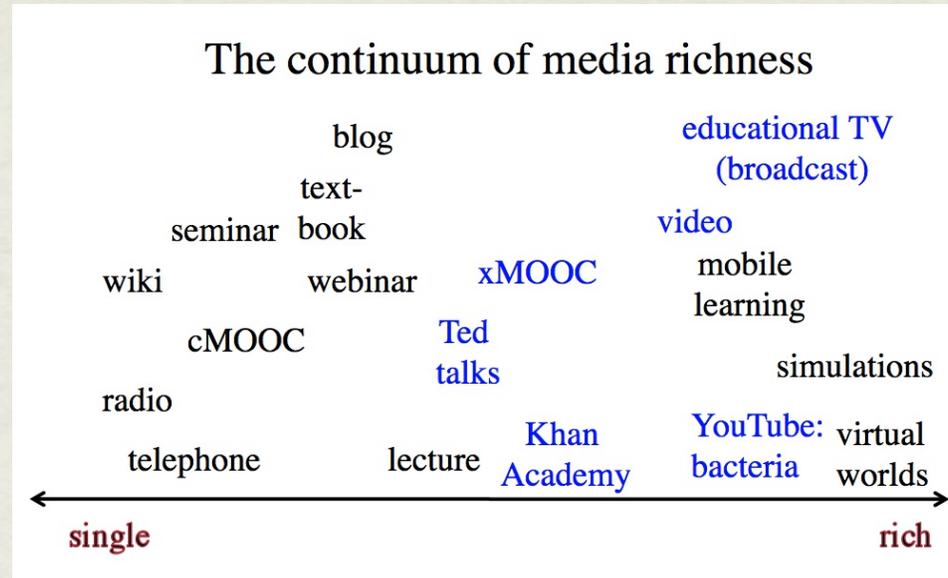
- Definition: some reduction in face-to-face teaching
- Many (75%) institutions in Canada offer some hybrid
- BUT few courses (60% with less than 10% hybrid)
- Rapidly growing: 50% in 5 years?



Canadian post-secondary institutions,
2017

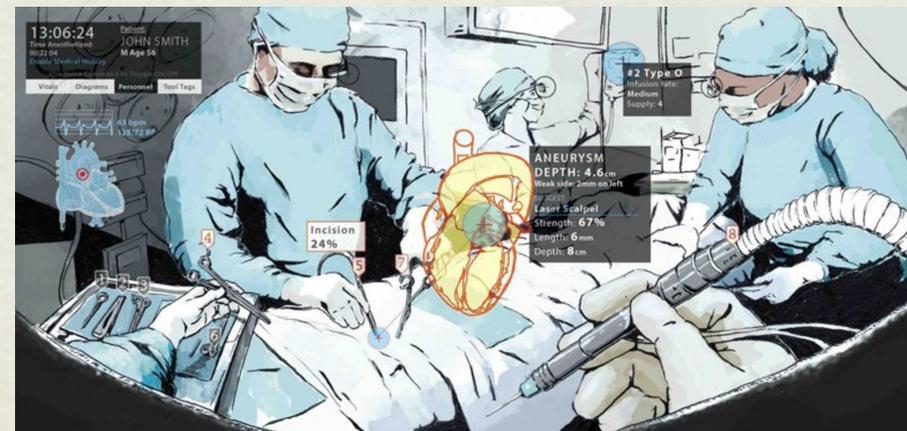
Multi-media

- Print and talk historically dominant; abstract, linear
- Knowledge represented now through many different media: text, audio, video, computing, virtual reality
- Research shows learning enhanced by multiple representations of knowledge



Multi-media shifting time and space

- Recorded media allow for repetition and practice: time on task away from class
- Interactive media can provide feedback (e.g. serious games)
- Some media (e.g. VR) allow for shift in space
- Need to link to specific skills development

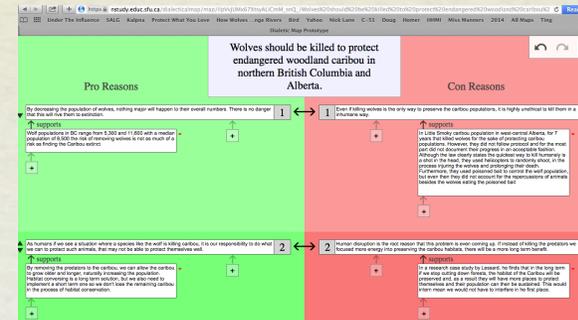


Virtual and Augmented Reality from the Augmentarium at the University of Maryland

Using online learning for skills development

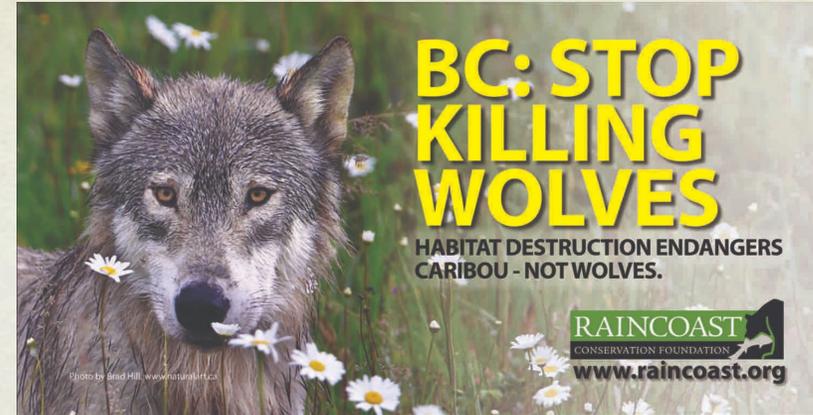
Contact North's Pockets of Innovation

- Simon Fraser Univ: scientific argumentation
- Loyalist College: border services protocols
- Ryerson University: law practice

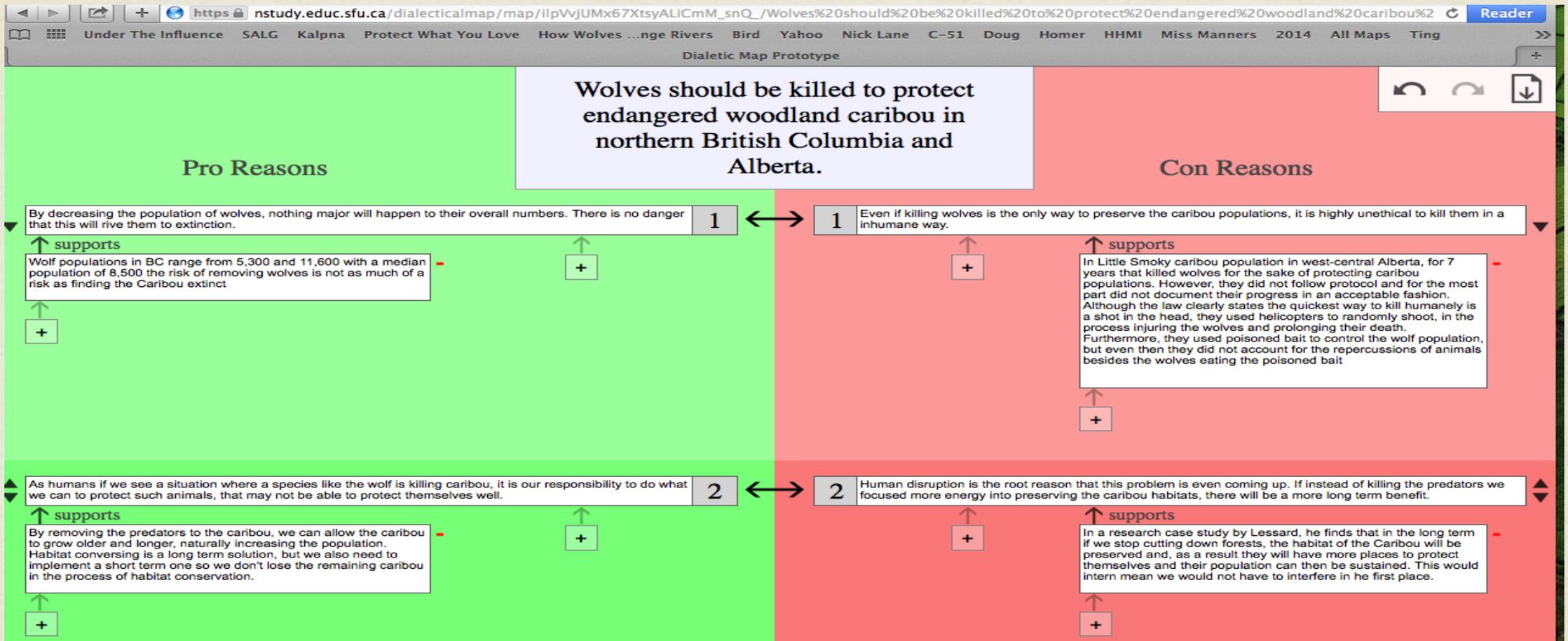


Example: scientific argumentation

- Teaching scientific argumentation
- Simon Fraser University biological sciences
- Students expect a 'right' answer for every scientific question
- Poor skills at scientific argumentation
- Simple web-based tool



Scientific argumentation



Scientific argumentation

https://nstudy.educ.sfu.ca/dialecticalmap/map/ilpVvjUMx67XtsyALICmM_snQ_/Wolves%20should%20be%20killed%20to%20protect%20endangered%20woodland%20caribou%20

Under The Influence SALG Kalpna Protect What You Love How Wolves ...nge Rivers Bird Yahoo Nick Lane C-51 Doug Homer HHMI Miss Manners 2014 All Maps Ting

Dialectic Map Prototype

+

+

3 There is no guarantee that wolf culling will have the same impact in every environment in Canada, it will be meaningless if the population of caribou don't rise after the culling of wolves.

↑ supports

In a study conducted by Hervieux he observed the caribou population in two different environments and how wolf culling had an impact in the two environments.

He looked at the data from Little smoky wolf population and Redrock prairie creek to see what effect the culling had on the caribou. He found that although in the little smoky wolf population, the caribou numbers increased, in redneck prairie the numbers of caribou continued to decline steadily.

+

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Add Pro Reason

Add Con Reason

The extinction of the caribou is a major problem today. On the one hand, it can be argued that we should act immediately and it may seem as though wolf culling is the only option. On the other hand, you have to wonder why we have any right to interfere with nature.

In the process of killing the wolves, we may protect the caribou, but endanger

Example: experiential learning

- Loyalist College, Ontario trains Canada Border Guards
- Built a 'virtual' border post and a virtual car
- Class split in two: agents and travellers; one car has drugs
- Teaches correct protocols/procedures



Example: law practice

- Ryerson University, Toronto
- Partnership with Ontario Bar Association
- Lawyers as mentors: 4 months practicum + 14 weeks online
- ‘Virtual’ law firm with real cases to manage: 4 students + lawyer



Implications for teaching and learning

Role of technology

- Use of video for demonstrating/modelling of skills
- Facilitates move from concrete to abstract and reverse
- VR for practicing skills in safe environment
- Need to know much more about 'affordances' of different media, especially classroom teaching



Tina the
Avatar, Drexel
University

Implications for teaching and learning: digital learning

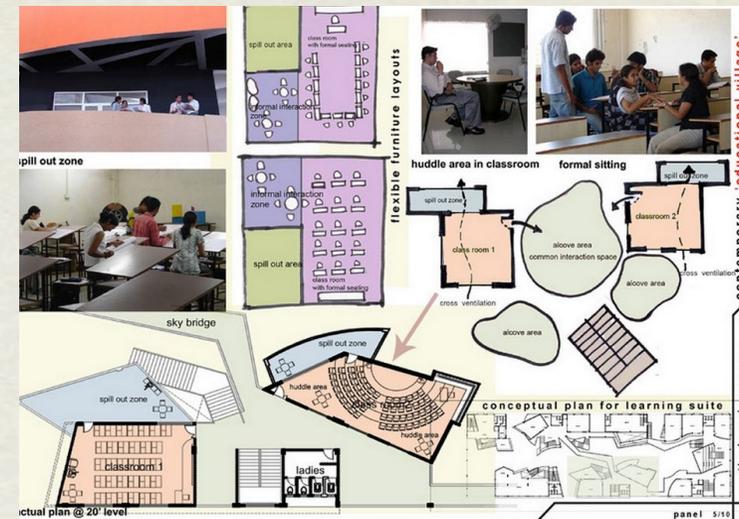
- Need to *learn* digitally to *earn* digitally
- Lay foundation for lifelong digital skills
- Digital technology embedded in teaching of core subjects
- Identify in every course what skills are being developed and how



Implications for teaching and learning: Use of space

Hybrid learning needs teaching environments where:

- Knowledge and skills can be demonstrated
- Student's digital work can be shared
- Students can work individually or in groups
- Evidence of digital learning can be stored and securely accessed by students and teachers



Implications for teaching and learning: building on past experience

- Over 20 years of fully online: we know what works online – and what doesn't
- Can't just move lecture content online: need to redesign
- What's best done face-to-face and what online? Needs thought/discussion
- Depends more on needs of students



Conclusions

- Digital economy requires high-level intellectual skills
- Teaching methods must include opportunities for skills development
- Technology enables more flexible delivery and ways to practice skills
- But all within a specifically designed learning environment that supports learners



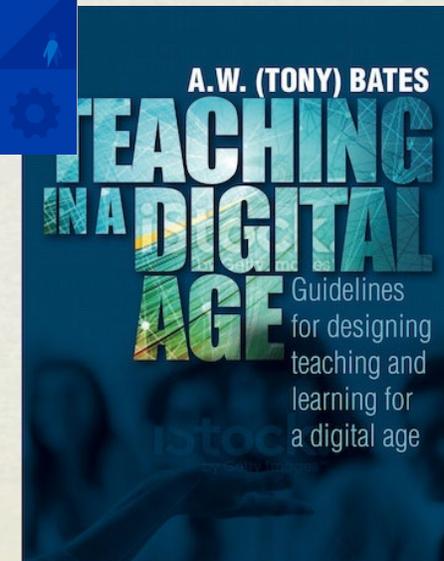
Conclusions

- Better definition and assessment of 21st© skills needed in every course
- Choice of technology should facilitate skills development
- Workshop: will look at how to design courses using technology for skills development

| | | |
|---------------------|---------------------|-----------------------|
| Analytical skills | Commitment | Communication skills |
| Creativity | Critical-Thinking | Decision-Making |
| Determination | Embrace Pressure | Emotional Control |
| Flexibility | Focus | Leadership skills |
| Motivational skills | Negotiation skills | Organisational skills |
| Patience | Perseverance | Persuasion |
| Presentation skills | Prioritize workload | Problem solving |
| Process information | Responsibility | Self-confidence |
| Social intelligence | Teamwork | Time Management |

Further resources

- RBC report: Humans Wanted
- Teaching in a Digital Age:
<https://opentextbc.ca/teaching-in-a-digital-age/>
- Blog: <http://www.tonybates.ca/>
- E-mail: tony.bates@ubc.ca





Copenhagen
Business School
HANDELSHØJSKOLEN



“STUDY INTENSITY”: How can a PBL university best prepare students to take up the challenges of a radically digitalized work society.

May 2019

Professor Jan Damsgaard
damsgaard@cbs.dk

Department
Of
Digitalization



The Danish Disruption Council

- PM and seven cabinet ministers
- CEOs of leading Danish businesses
- Confederation of Danish Industries
- Danish Chamber of Commerce
- The Danish Confederation of Trade Unions
 - Union of Danish Metal Workers
 - Union for Salaried Employees
 - United Federation of Danish Workers
 - And two professors



DISTRUPTIONRÅDET

Etableret den 1. maj 2017 som et partnerskab mellem regeringen og nøgleaktører
8 ministre med Statsministeren som formand // 29 rådsmedlemmer udpeget af regeringen





Tangible results

- A minister for research and education
- Technology pact - more STEM candidates from higher education
- The worlds first agreement between a union and a platform
- A tax agreement with AirBnB
- A committee on Internet Giants regulation
- A committee on Data Ethics – a moral compass
- Computer literacy in primary and secondary school (creation)
- National research center in digital technologies
- A report titled “Prepared for the future of work”



20 years later and all of these things fit in your pocket.



Three mega trends

- From retail to market place
- From product to service
- From ownership to access



From retail to market place

- Payment will be disrupted
- Insurance will be disrupted
- Lending will be disrupted
- Mortgage loans will be disrupted
- Business capital will be disrupted



LENDINO



- The finance sector will be leaner and less lucrative
- Disruptions will be common from start ups and adjacent sectors
- The only unknown is speed





From product to service

- Sell the outcome
 - From plane engines to airplane propulsion
 - From trucks to tons/km
 - From pumps to hot water
 - From thermostats to comfort
 - From insulin to a good life with diabetes
 - From lawnmowers to green lawns



DEWALT DC759KA 18-Volt NiCad 1/2-Inch Cordless Dual speed range (0-to-450 RPM and 0-to-1,500 RPM)
Weighs 4.7 pounds, One-hour charger, two 18-volt batteries & double-ended screwdriver bit



From ownership to access

- Unlimited access presupposed ownership
 - E.g. a car, poor exploitation of a costly resource
 - Streaming has changed this fundamental principle in music, movies and games
- This change will also happen for physical products
 - The product exceeds the individual usage
 - Communities and rentals/subscriptions





Platforms

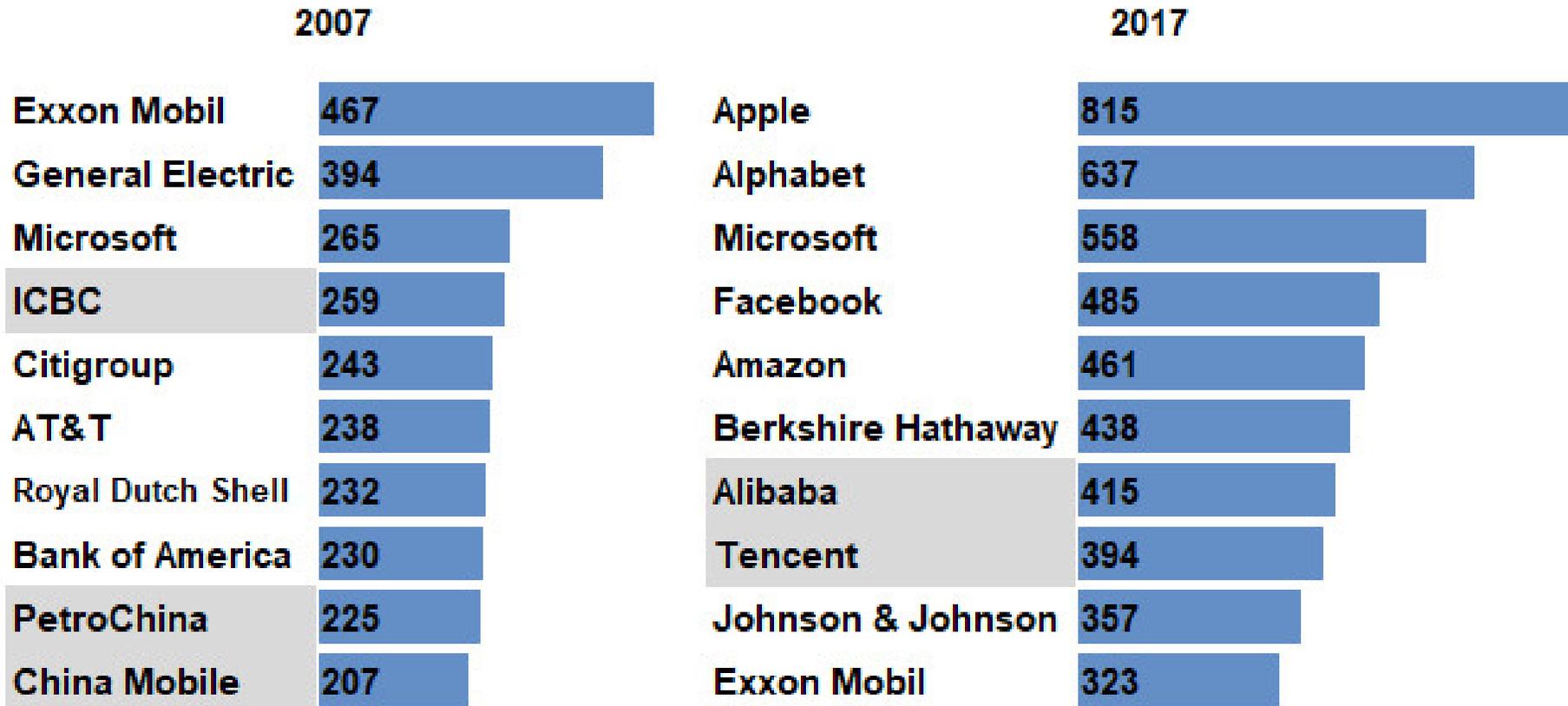
- Platforms are the most valuable companies in the world
- Platforms have much fewer employees than traditional companies
 - AirBnB is more valuable than Marriot. Marriot has 200.000 employees while AirBnB has 5.000
 - Paypal is three times more valuable than Deutsche Bank. DB has 101.000 employees while Paypal has 15.800
 - Facebook is twice as valuable as Walt Disney, but FB has only 12.600 employees compared to WDs 185.000
- Welfare states have a tax income problem

Numbers from 2016



Platforms are the greatest

World's Largest Companies by Market Capitalization





The future labor market

- More will be contract workers
 - Several employers at the same time
- They are rewarded according to output (results) and not by input (hours)
- They will work for several employers simultaneously
- They will vary their efforts over time
- Many will be part of a partly global workforce and will be remunerated accordingly
- The assessment is the most valuable asset and not the formal education
- The demand determines the payment



Perilis of platforms

- Many of our rights are secured through our job contract
 - Sick pay
 - Pension
 - Paid holiday
 - Parental leave
 - Skills upgrading
 - Overworking/jeopardize health/tax evasion/social fraud
- In a Danish welfare society these concerns must be addressed and protected



Topcoder



- Topcoder is crowdsourcing platform with an open global community of more than one million designers, developers, data scientists, and competitive programmers.
- Topcoder pays community members for their work on the projects and sells community services to corporate, mid-size, and small-business clients
- https://www.youtube.com/watch?v=piKWzozuq_Y



**Copenhagen
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Topcoder

Department
Of
Digitalization





REMOTE YEAR

Remote Year

- Remote Year is a totally different approach to traveling the world.
- Come with your job and a suitcase. We'll take care of the rest.
- 12 cities around the world in one year
 - 24/7 Workspace Access
 - Living
 - Local City Team
- <https://remoteyear.com/>



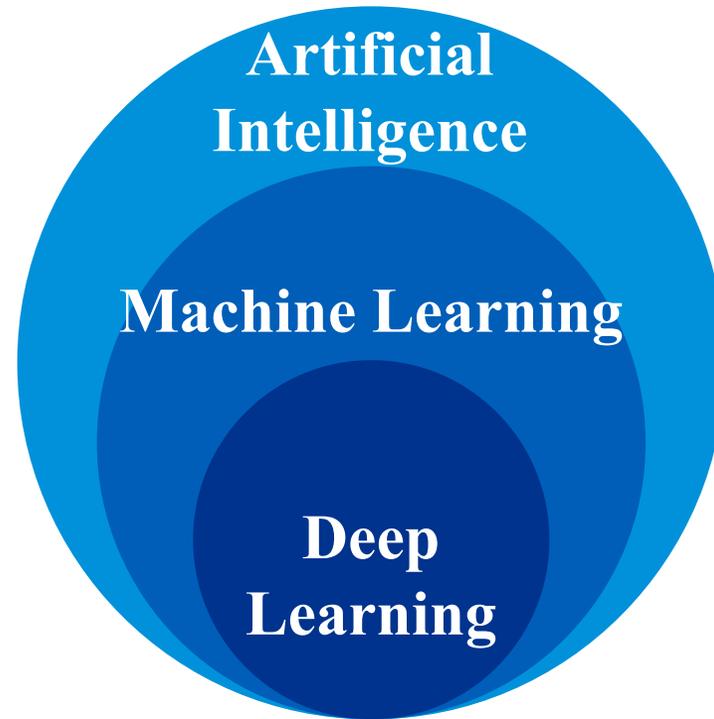
POL and platforms

- From working with someone who is similar to you to someone that is different from you
 - Educational, cultural and age
- From working with someone who is sitting next to you to working with someone remote from you
- From standing relationships to project based relationship

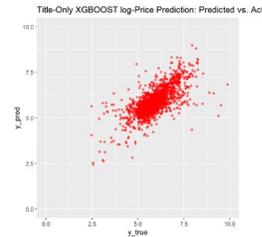


AI – artificial intelligence

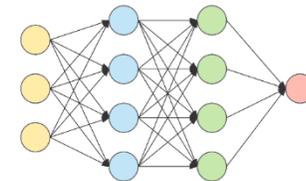
- Massive breakthroughs in IoT, Big Data and AI



Robotics



ML algorithms



Neural Networks

PBL - you don't solve the same problem twice



Conclusions

- PBL will continue to be an effective vehicle for learning also in a digital world
 - For everything else there is AI
 - Structural unemployment
- The disruption of learning
 - Learning platforms
 - Democratization of learning
- Digitalization must be landed
 - established companies cannot expect a level playing field