A photograph of a university campus. In the foreground, a young man is lying on his back on a green lawn, looking at his phone. To his right, a group of students is sitting on the grass, some talking and some looking at their phones. In the background, a modern university building with large windows and a dark facade is visible. A young man in a blue shirt and shorts is walking across the lawn on the right side. A tree is on the left side of the frame.

A critical-constructive view on educational technology

Reclaiming pedagogy

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Bio

- ▶ Professor in PBL and Digital Learning – Department of Planning, Aalborg University
- ▶ Aalborg Centre for Problem Based Learning in Engineering Science (www.ucpbl.net)
- ▶ Co-chair of the international ‘Networked Learning Conference’ (<https://www.networkedlearning.aau.dk/>)

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Agenda

- ▶ Critical-historical perspective on educational technology
- ▶ EdTech – a tale of two pedagogies
- ▶ Emerging modes of work and learning - trends
- ▶ Examples of rethinking educational models
- ▶ Reclaiming pedagogy – summing up



Critical-historical perspective on educational technology



Digital learning

- ▶ Digital Learning is often viewed through the lens of dawning and emerging technologies, so perhaps I should be speaking of:

Robots

Artificial Intelligence (AI)

Learning Analytics

Flipped Learning

Big Data

AR / VR / Meta-verses

- ▶ And how they might revolutionise or disrupt education





However.... I am not going to do that!

- ▶ We assume educational technologies will bring **benevolent** changes to education
 - ▶ better learning, student-centred pedagogies, enhance motivation, will prepare students for the 'future'
- ▶ Not about 'best practice' or 'what to and how to' – but inviting to think about 'why and where-to'?
- ▶ Will highlight (also) the **dark** sides of educational technologies
- ▶ Will talk about opportunities and provide examples/ideas of digital practices we are developing in AAU
- ▶ More fundamentally about 'reclaiming pedagogy and education'



But let's start by going



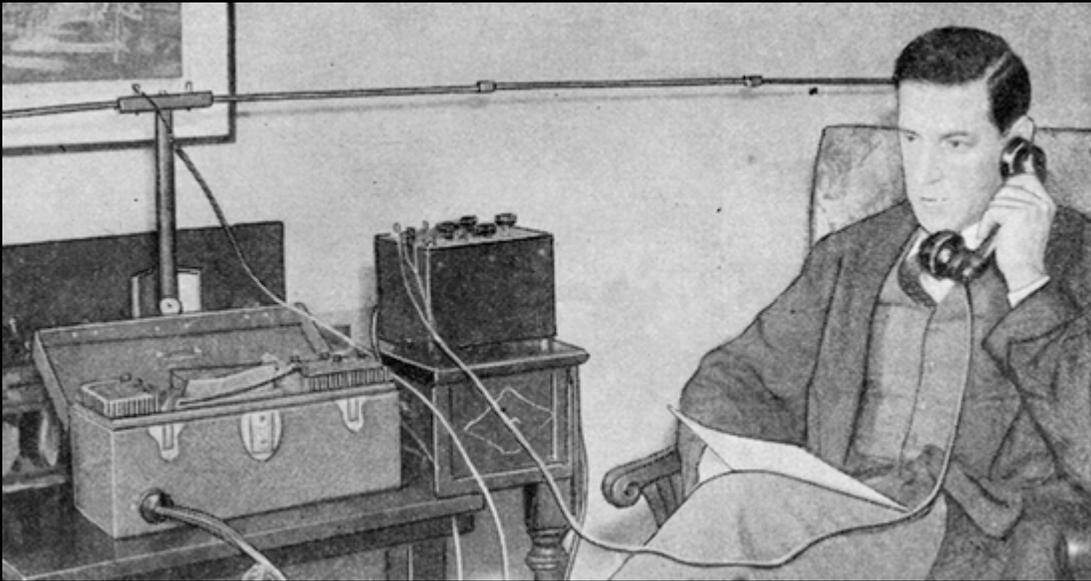
(Of educational technology)

“There must be an **industrial revolution** in education in which educational science and the ingenuity of educational technology combine to **modernize the grossly inefficient and clumsy procedures of conventional education.**”

- Sidney Pressey, **1924**, *inventor of the Automatic Teacher, the first electronic device used in schools*

The **motion picture** is destined to **revolutionize** our **educational system** and...in a few years it will **supplant** largely, if not entirely, the use of **textbooks**.

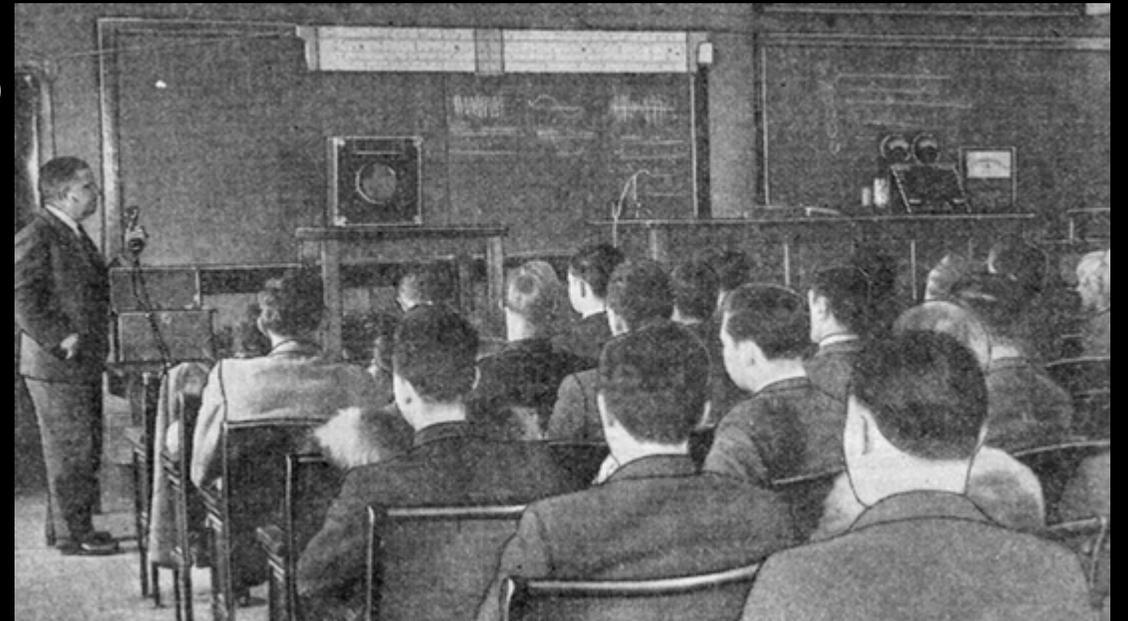
—Thomas Edison, 1922



Prof. C. C. Clark of New York University conducting a class from his home (1935)

“The scene will be a commonplace one **tomorrow**, without a doubt, when **television** will be as **indispensable** to our every day home life as the radio program receiver is today.”

(The April 1935 issue of *Short Wave Craft* magazine)



This video shows Skinner himself describing its use. Fascinating!

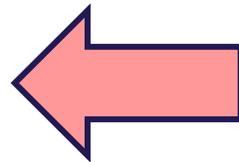
1954

B.F Skinner. Teaching machine and programmed learning



The goals of the "Teaching Machine" that BF Skinner describes are similar to our modern interpretation of online learning:

- Immediate feedback
- Self-paced learning
- Ability to align with student's level
- Ability to cover more material in less time



Often heard and recited in relation to X learning technology....Laptops, Ipads, MOOCs (individual, self-paced learning)

BRIEF

Robotics and AI tech can revolutionize classroom ed

<https://www.educationdive.com/news/robotics-and-ai-tech-can-revolutionize-classroom-ed/446422/>

An avalanche is coming: Higher education and the revolution ahead

'Our belief is that deep, radical and urgent transformation is required in higher education as much as it is in school systems. Our fear is that, perhaps as a result of complacency, caution or anxiety, or a combination of all three, the pace of change is too slow and the nature of change too incremental.'

<https://www.ippr.org/publications/an-avalanche-is-coming-higher-education-and-the-revolution-ahead>

10 Disruptions That Will Revolutionize Education

Artificial intelligence and technology will prove significant for education

By Peter W. Cookson Jr.

October 10, 2017

<https://www.edweek.org/ew/articles/2017/10/11/10-disruptions-that-will-revolutionize-education.html>

Hi Tech Huge gaps between:

Vocal discourses of imminent and radical changes

- Game-changers, disruptions, paradigm-shifts, 2.0s, don't miss the train

Mind the gap

The actual qualitative changes technologies have brought about in education and the speed of those changes

The same 'train of thought' seems to return to the station without realising it has been there before...a city ring



#EDTECH – A TALE OF TWO PEDAGOGIES



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History of #edtech not a neat and orderly progression – rather a struggle between perspectives / pedagogical ideals (Weller, 2007)

Broadcast view

- Deliver or make content and resources globally available - on demand
- Self-paced, individualised
- Reuse, scalability, cost efficiency (reducing the role of the teacher)
- **Also:** Control, standardisation, institutionalisation, industrialization
- **Mainstream**

Discussion view

- Knowledge through dialogue, exploration, collaboration and communication
- Mutual dependency or relations between students and between students and facilitators
- Groups, relations, cooperation and collaboration – dependency in time
- **Fringe**

Jones, C., & Dirckinck-Holmfeld, L. (2009). Analysing Networked Learning Practices. In L. Dirckinck-Holmfeld, C. Jones, & B. Lindström (Eds.), *Analysing Networked Learning Practices in Higher Education and Continuing Professional Development* (pp. 10–27). Rotterdam: Sense Publishers.

Weller, M. (2007). *Virtual learning environments : effective development and use*. London: Routledge.



But also a tale of two economies or perspectives

- ▶ #EdTech often sold as:
 - ▶ Active learning
 - ▶ Empowering students & teachers
 - ▶ Increasing engagement
 - ▶ Public good – increasing access to education
 - ▶ Personalisation, individualisation, lifelong learning
- ▶ But over time often come to address other stakeholders' problems
 - ▶ Managing students and courses – LMS are infrastructures for information and logistics, more than spaces of learning
 - ▶ Plagiarism
 - ▶ Minimising costs
 - ▶ Personalisation → disaggregation of education as public good, student as customer picking across marketplaces, new actors in the edumarket (Google providing own education)
- ▶ It often becomes blurry what problems we are solving with 'educational' technologies and who we are actually benefitting



MOOCs

Massive Open Online Courses

➤ 2008: Experimental MOOCs (cMOOCs)

- Developed within Academia, No official learning goals or credits. Non-commercial
- Readings and distributed activities in digital spaces

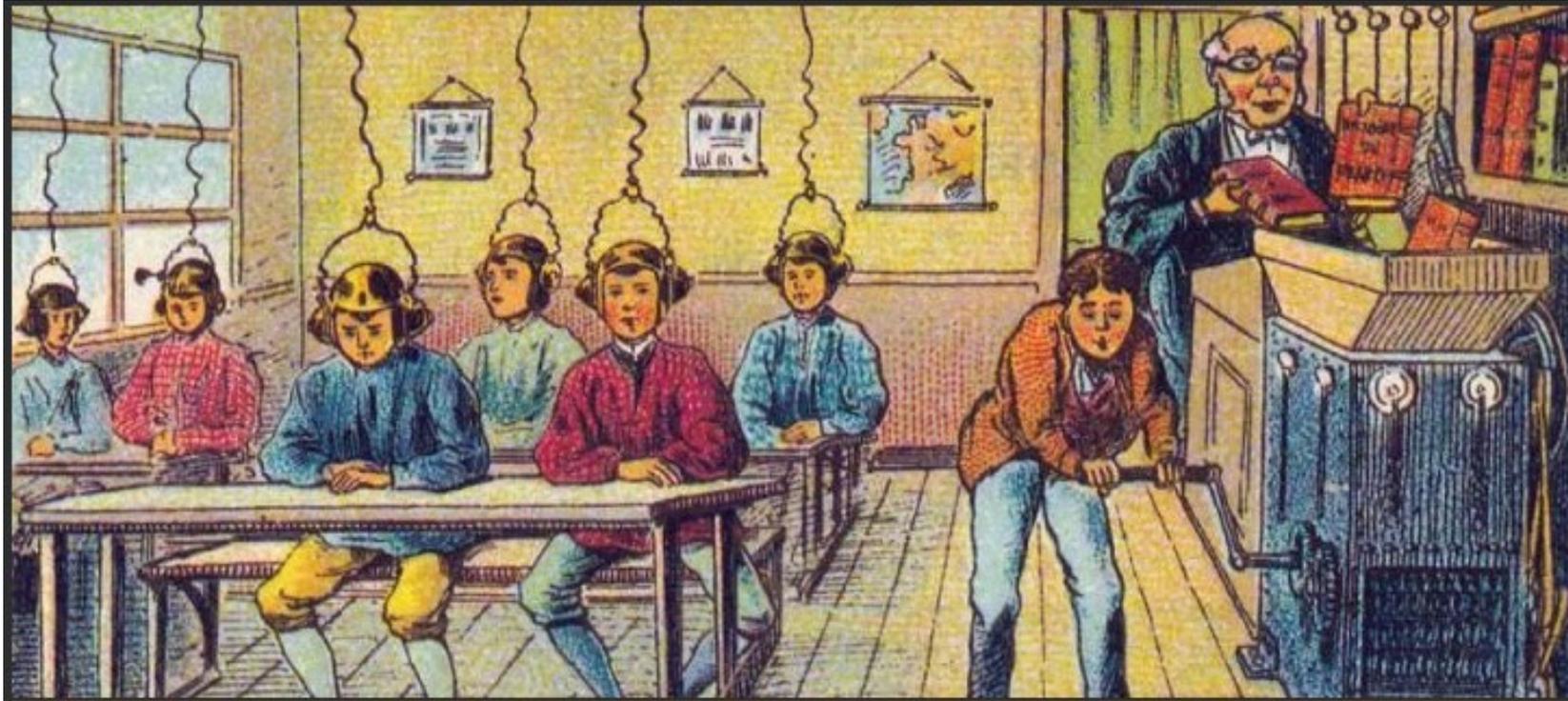
➤ 2012: Popularisation of MOOCs (xMOOCs)

- Ivy-league university company spin-offs (udacity, coursera) promise to 'disrupt education' and 'opening up education to the world'
- Timed and paced, clear syllabus and learning goals, short targeted video-lectures, quizzes, machine-assessment or peer-grading

➤ Concerns:

- xMOOCs built on a pedagogy developed in Open Universities since the 60s – however often failed to include the insights developed by existing research
- Highly individualised - little incentive to collaborate
- Bottle-neck problem – reducing need for teachers ('academic precariat')
- 'Open' – But are course material open, who owns data and work?
- Unclear business-models – free, freemium, course diploma
- Neo-colonialism – rather than capacity building - benefitting the 'haves' over the 'have nots'
- More than disruption it was perhaps a clever way of entering traditional market for educational technology

Much #EdTech in reality is:



- ▶ One can replace the 'machine' with TV, video, AI etc. but many of the ideas are the same – efficient acquisition of centrally defined knowledge where role of the teacher is minimised
- ▶ Speaks often to a **political-economical** desire to maximise learning and minimising costs

EMERGING MODES OF WORK & LEARNING

Personal learning networks

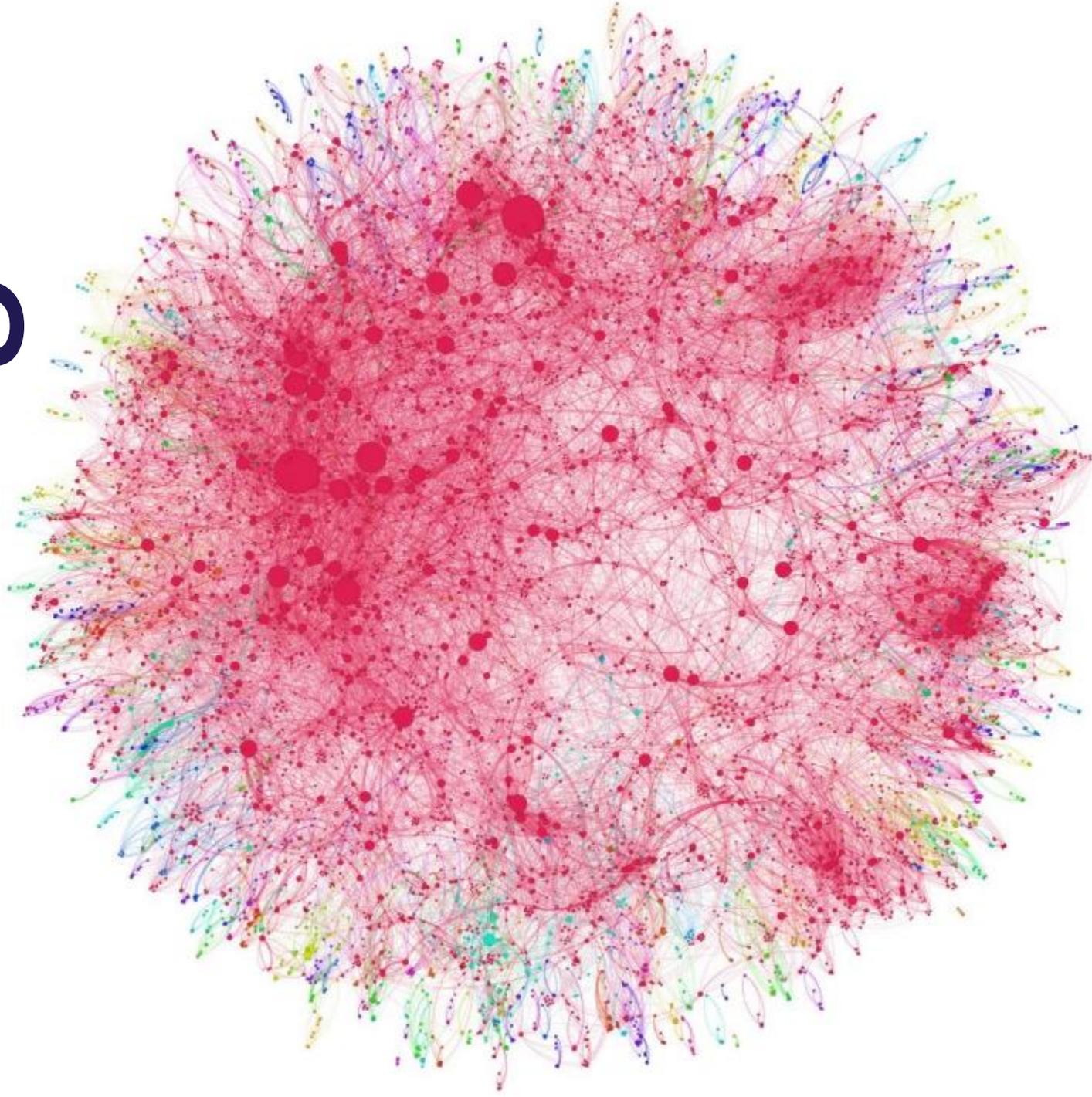
Pedagogy of abundance

Both challenging – in some ways – how we understand digital learning and education

But are also possibilities



Challenge!



Complex massive social and personal networks

Potentials, trends, pressures

- ▶ **New media ecologies:** access to open courses, videos, learning materials (Open Educational Resources)
 - ▶ ‘**Pedagogy of abundance**’ How to meaningfully work with and appropriate
 - ▶ University as less of a container/silo leaking knowledge – outside world is starting to ‘peak in’, penetrate, take over
- ▶ **Personal learning networks and communities** – creating and sustaining learning networks and engaging with knowledge communities
 - ▶ The networked student/teacher
- ▶ **Mobility, flexibility – creating new connections between education, home, work** (flipped learning, partly netbased – campus to online)
 - ▶ *“Re-working the concept of ‘contact time’ to reflect contemporary practice; Breaking down the boundaries between on and off campus; Re-thinking what it means to be ‘here’ at Edinburgh; Offering more flexible ways to be part of the university community” (www.nearfutureteaching.ed.ac.uk report)*
- ▶ **New ways to explore and engage** with learning content: **3D, VR, AR, Simulations**

Personal Learning Networks (PLNs)

Ego-centric networks formed through e.g. social network sites (facebook, twitter, pinterest)

Traversing and harvesting the ego-centric network for information, ideas, and resources (and contributing)

The individual person's ability to form and sustain a personal learning network

Many strengths and potentials – but heavily individualised notions of learning underpinning the ideas of PLNs





Pedagogy of abundance

A world with access to open courses, open learning materials, 'alternative knowledge sources'

Teacher: From producer to curator or co-producer, orchestrator of material and opportunities for learning

Many strengths and potentials – but what is the quality of the material, how does it speak into an education as profession (identity, formation) and not just bits of knowledge. Credits for a MOOC on Stanford?

Two examples

How we can rethink personal learning networks and pedagogy of abundance from a PBL Perspective

Flipped semester

COOPs – Collaborative Open Online Projects

Flipped Semester

- ▶ Development project in AAU
- ▶ Currently three 5 ECTS courses + 15 ECTS project
- ▶ Relations between courses and semester project challenged
- ▶ Flipped Courses might further aggravate this tension
- ▶ Rethinking the relations between courses and projects as a flipped semester

5 ECTS course

5 ECTS course

5 ECTS course

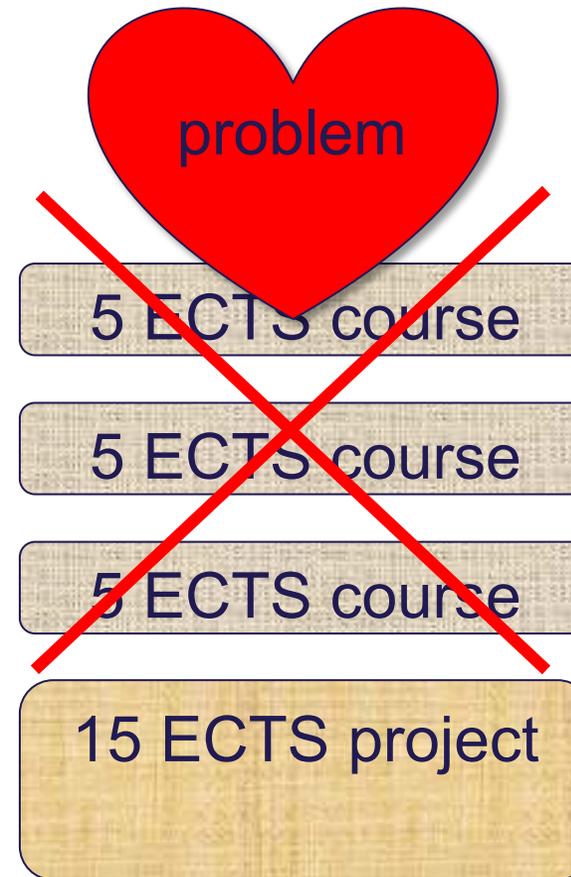


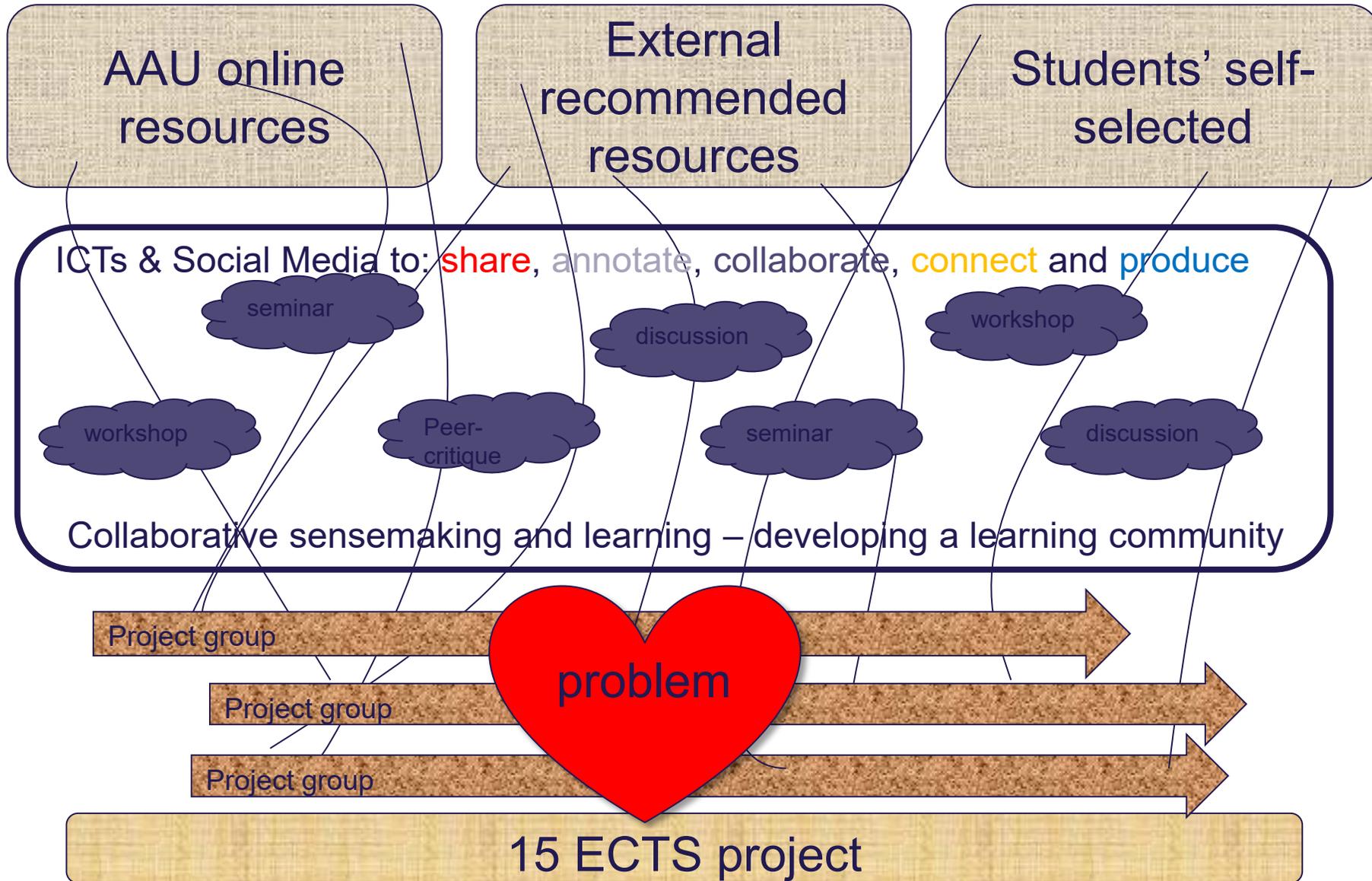
15 ECTS project



Flipped Semester

- ▶ 'Problem' and 'Problem analysis' as main vehicle of the **semester**
- ▶ Courses and lectures to become online resources that students can access
 - ▶ Self-developed internal as well as recommended external
 - ▶ Material and courses students identify
- ▶ Time and activities organised as workshops, discussion groups, seminars, peer-critique and learning
- ▶ Use of ICTs & social media to enable students to **share**, annotate, collaborate, **connect** and **produce**
- ▶ Developing a **learning community** between students and teachers/facilitators
- ▶ But also students create Personal Learning Networks

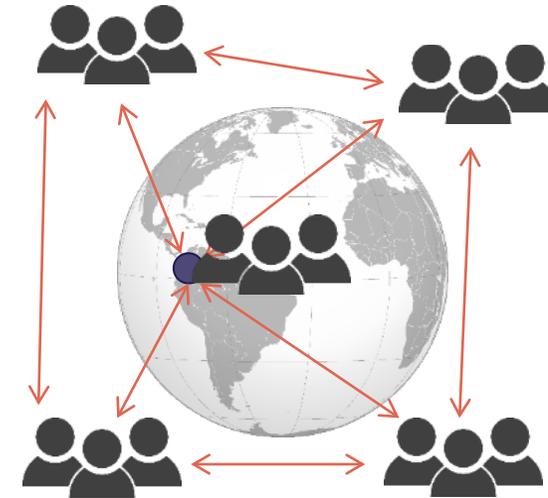




COOP – Collaborative Open Online Projects

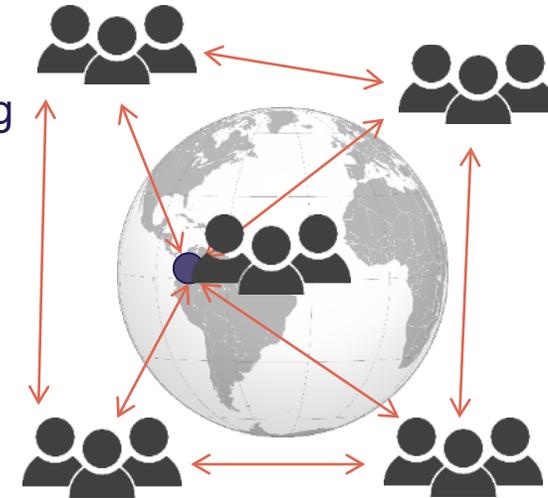
COOP – Collaborative Open Online Projects

- ▶ Extending Mega-projects (<https://www.megaprojects.aau.dk/>)
- ▶ Collaborations between universities, NGOs, industry to identify relevant grand challenges
- ▶ Global real-world and open-ended problem in a local context
- ▶ Interdisciplinary globally distributed groups work together with local students and researchers
- ▶ Collaborate and build an online learning community through ICTs and Social Media
- ▶ Learning driven by the problem and scaffolded by seminars, discussion groups, researcher interaction
- ▶ Student groups produce a small project to gain credits



COOP – Collaborative Open Online Projects

- ▶ Alternative to market-driven MOOCs and ‘courses’ as main form of learning
- ▶ Not a course & curriculum - deep engagement with a global problem
- ▶ Problem is driver for learning in and between groups building a committed learning community
- ▶ Collaboration at scale learning in the group as well as learning from and with other groups
- ▶ Forming both small collaborative group networks as well as large-scaler complex, learning networks



Reclaiming pedagogy



Not really about technology...

An attempt to re-think, re-design and reclaim a pedagogical idea (PBL) and certain values around education (student-driven, problem-oriented)

Because:



We often put the horse before the cart

- DigTech becomes a goal in itself, rather than a means to realise a pedagogical or organizational ideal
- In the humdrum of real-life and being busy we come to focus on the 'what to' and 'how to'
- Often loose sight of the the 'why' and 'where to'
- Problem definition becomes a struggle
 - shift or alternations in focus
 - Pedagogical
 - Administrative
 - Economical
- Other agendas can quickly come to overrule our own intentions and ideas





Maintaining focus on the pedagogy – harder than it sounds!

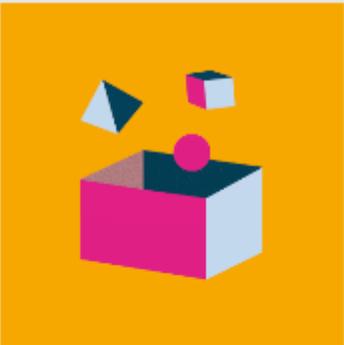
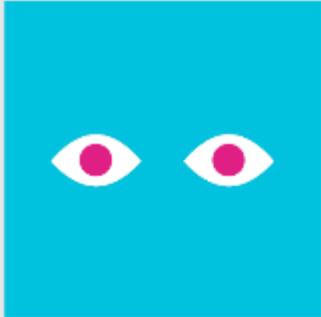
- ▶ Question should not be “**How do I use video in my teaching**” – but point of departure in pedagogical challenges – **Why use Digital Tech:**
 - ▶ Not: ~~How can I flip my courses?~~
But: “**How do I improve students’ engagement and make them take responsibility**”
 - ▶ Not: ~~How do I implement Mendeley:~~
But: “**How can I help students become better in finding good literature and state-of-the-art research**”
 - ▶ Not: ~~How can we use Kanbanflow:~~
Men: “**How can we improve students’ ability to collaborate and plan their work**”



Example from Edinburgh

- Report on 'Digital Learning' at Edinburgh University (www.nearfutureteaching.ed.ac.uk) – identifying central 4 values and 6 visions and aims

The infographic is divided into two main sections. The left section features four colored boxes, each with an icon, a title, and a short paragraph. The right section is a vertical yellow bar with six numbered items, each with a title.

 <p>Experience over assessment</p> <p>Learning should not be over-assessed and instrumentalised.</p> <p>Teaching should share a focus on employability and success with an understanding of the value of rich experience, creativity, curiosity and – sometimes – failure.</p>	 <p>Diversity and justice</p> <p>Education should design-in meaningful diversity and real inclusion across all areas of activity.</p> <p>All near future teaching should further social responsibility and global justice.</p>	 <p>Relationships first</p> <p>Relationships, dialogues and personal exchanges between students and staff build understanding in a way that is not possible via transmissive forms of teaching.</p> <p>Teaching should be designed to provide the time and space for proper relationships and meaningful human exchange.</p>	 <p>Participation and flexibility</p> <p>The University community should cooperatively shape how – and what – it learns and teaches.</p> <p>Flexibility for individuals, fluency across disciplines and cooperative responsibility for curricula should shape near future teaching.</p>	<p>1. Community focused</p> <p>2. Post digital</p> <p>3. Data fluent</p> <p>4. Assessment oriented</p> <p>5. Playful and experimental</p> <p>6. Boundary challenging</p>
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Reclaiming pedagogy and education

- ▶ Remembering to focus not only on ‘What-to’ and ‘How-to’, but ask the questions of ‘Why and Where-to’
- ▶ What are the pedagogical aims of adopting ‘digital technologies’
 - ▶ ‘What challenges are we addressing?’
 - ▶ ‘What problems are we trying to solve?’
 - ▶ ‘What problems do we create?’ (because new tensions *will* emerge)
- ▶ Juggling and remaining open about different and potentially conflicting goals and purposes: Pedagogy, administration, economy
 - ▶ What interests and whose interest are we serving?





**THANK YOU – QUESTIONS AND
COMMENTS?**



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References for pics

- ▶ CC-licensed material from Flickr – starring in no particular order and some not used..:
- ▶ <https://flic.kr/p/8R3pxY>
- ▶ <https://flic.kr/p/dB91Ut>
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