Missing opportunities of digitalisation for teaching and learning.

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Picture credits: europeana.eu, id: Inb-zl-12542, 1980, National Library of Latvia: Elektroniskās skaitļošanas tehnika Rīgas Politehniskajā institūtā | Salcēvičs, Romvalds, 1949-
Digitalisation is everywhere!

Political poster in Bavaria, 2018 – “Blockchain and brass bands”
With technology-first approaches we are missing chances

**Technology-first:**
- “Innovation (is) ... designed asymmetrically. The focus is primarily on technological innovation. Social innovations are understood mainly in their functional relationship to this or positioned as a ‘compensatory counterpart’.”

**Social innovation:**
- New combinations or configurations of social practices.
- Looking at innovation from the user perspective

Demand-side vs. supply-side thinking ...or why I don’t have an ebike

It would be great because...

* It is easier to travel distances and reach heights, even for less athletic people
  * efficiency
  * access to different terrains
  * access to mountainbiking

I don’t use one because...

* It doesn’t fulfil my needs
  * expensive / unaffordable
  * not easy to repair (especially in the woods)
  * heavy
  * different riding experience
Digitalisation in higher education – as social innovation

“Digitalisation should not be viewed as an additional challenge, but as a powerful means to meet existing challenges for higher education.”

(https://bolognadigital.blog/)
The biggest danger is not that machines will take over but that we may become too much like them!

Three key attributes based on ‘engineering bottlenecks’ Osborne & Frey

Social intelligence - the ability to effectively negotiate complex social relationships, to collaborate, to empathize, to recognize cultural sensitivities, to care for others

Cognitive intelligence – the ability to problem-solve, complex-reasoning and the ability to be creative, work outside or redefine the ‘rules’

Perception and manipulation – the ability to carry out physical tasks in an unstructured work environment

### Need to switch occupations based on future scenarios

Globally, up to 375 million workers may need to switch occupational categories.

<table>
<thead>
<tr>
<th>Country</th>
<th>Workers Needing to Switch Occupations</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>166 million (up to 32%)</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>37 million (up to 46%)</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>37 million (up to 33%)</td>
<td></td>
</tr>
<tr>
<td>Other advanced</td>
<td>135 million (up to 33%)</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>757 million (up to 13%)</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>612 million (up to 6%)</td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>68 million (up to 10%)</td>
<td></td>
</tr>
<tr>
<td>Other developing</td>
<td>767 million (up to 9%)</td>
<td></td>
</tr>
<tr>
<td><strong>Global</strong></td>
<td>2,661 million (up to 14%)</td>
<td></td>
</tr>
</tbody>
</table>

1. Some occupational data projected into 2016 baseline from latest available 2014 data.

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**In advanced economies, one third of workers projected to need to change occupation by 2030.**

Higher education’s challenges from outside

- Job market
- Skills demands
- Technology
- Demography

[ENVIRONMENT]
Higher education provision made up of 3 core processes

Digitalisation as facilitator for 2 dimensions
- flexibility \((\text{organizational openness})\)
- inclusion \((\text{social openness of processes})\)
Using this model (OOFAT), we found 6 strategy types

- access-focused OOFAT: focus on access to content and support; 6; 9%
- OOFAT for organisational flexibility: flexibility of provision; 9; 13%
- content-focused OOFAT: focus on content development and delivery specifically; 5; 7%
- OOFAT at the centre: an integral part of the institution’s overall mission; 10; 14%
- OOFAT for a specific purpose: specific function, not right across the institution; 11; 16%
- OOFAT for multiple-projects: experimenting with different aspects of OOFAT; 28; 41%

Only few (14%) innovate through digitalisation in all areas

Note: n=69 HEIs providing complete responses on OOFAT model.
Example – case OERu as cooperation network

The OERu network of institutions offers free online courses for students worldwide. OERu partners also provide affordable ways for learners to gain academic credit towards qualifications from recognised institutions. The OERu uses open source software, makes all its content available as OER, and allows some pathways where students can study their first year of an undergraduate course for free, and this will then be formally recognised, allowing transfer into the formal education system. Open
Alignment of model to key Bologna challenges

Opening up higher education to a diverse population (I)
Admission process (III)
Internationalisation and mobility (VI)

Access to and delivery of learning opportunities
Recognition and certification of competencies and learning
Recognition of non-formal (digital) learning (II)
Degrees and qualifications (V)

Learning content, learning support and didactics
Teaching and learning (IV)

Flexibility and openness

Quality assurance (VII)

Digitalisation should focus on these 7 issues related to these 3 core processes

(https://bolognadigital.blog/)
Alignment of model to key Bologna challenges

- Open badges
- MOOCs and OER
- Flipped classrooms
- Learning analytics
- Augmented reality
- Virtual mobility
- Study support / social bots
- Student networks
- Virtual introductory courses / summer schools
- User statistics as business intelligence
- Recognition of non-formal (digital) learning (II)
- Degrees and qualifications (V)
- Access to and delivery of learning opportunities
- Recognition and certification of competencies and learning
- Flexibility / openness
- Teaching and learning (IV)
- Internationalisation and mobility (VI)
- Admission process (III)
- Opening up higher education to a diverse population (I)
- Quality assurance (VII)
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