Digital Transformation in Higher Education—Buzzword or Opportunity?
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Abstract
We argue that, starting from a sophisticated understanding of “digital,” we should develop a corresponding notion of “education” suitable to meet the challenges of the ongoing digital transformation. The central task for HEI is to model the complex networks of digital skills (critical thinking, media literacy, cross-cultural competence, etc.) as a foundation for creating contextualized learning scenarios in the disciplines. The crucial success factor is the reunification of the classroom with the real world.

Skills and Challenges in Today’s Digitally Transformed World
Various institutions and scholars have proposed lists of skills likely to be needed in the next decade and beyond. [1, 4, 11] Interestingly, they do not include purely technical skills like programming but thinking (sense making, computational thinking, creativity, critical thinking), specific attitudes (design mindset, cognitive flexibility, adaptability, perseverance, agile working, ethics), and interaction with others (social and emotional intelligence, virtual collaboration, cross-cultural competency, people management, negotiation). Most of these skills are not related to a specific technology; specific technical or informatics skills are required for a few specialists only.

On the other hand, we live in a digital world now and we debate “digital skills” and “digital literacy”—“digital” has become a buzzword to emphasize that transformation and learning are actually referring to today’s world and force us to keep up with current developments. Terms like digitization, digitalization, and digital transformation are often used interchangeably, but refer to distinct concepts:

- Digitization: transform analog objects into digital representations, i.e., into digital objects or data (we read texts online as PDF, not as paper textbooks).
- Digitalization: improve processes by use of digitized data, use or develop programs to handle these data, i.e., have digital technologies with a specific benefit, transforming data into information (we can annotate those PDFs and share the annotation with others).
- Digital transformation: transform organizational processes, build new competencies and models through digital technologies in a profound and strategic way. The human element is key on all levels, i.e., new processes for human-human and human-machine interaction based on digital technology using digital objects are created (algorithms aggregate and read thousands of PDFs and their annotations at a time, present summaries and suggestions for further readings).
One of the risks in current public and specialist discussions is to only consider digitization and digitalization. But the new challenges refer to the use of digital technology and its ethical and cultural issues. “Digital skills,” i.e., skills relevant in a digitally transformed world, do not pertain to digitization or digitalization. They rather apply to the ability to abstract from examples and to find general demands and solutions, to be used to develop contextualized solutions for specific problems. Abstraction and contextualization are the key terms.

Basic social skills could be considered “classic skills”: in order to be successful, you always had to innovate and thus think critically and in creative ways. Success also depends on interpersonal skills, e.g., to negotiate with clients or competitors. In today’s digital and global world, we work with people far away from our own bubble—we differ in cultural aspects and we might never meet in person—and we interact with machines in a way we used to interact with other humans.

**Digital Transformation in Higher Education as Contextualization**

How does all this affect Higher Education (HE) and how should Higher Education Institutions (HEI) evolve? Based on our long-standing experience in European HE, we propose to use the digital transformation as opportunity to re-contextualize learning.

The current discussion risks to get stuck with the notion of digitization and focus on transformation and use of data without considering the larger implications, just as when downloading digital music. In the background, not only the equipment, but also the production processes of music have thoroughly changed. Smaller studios were founded, the medium-sized ones were bought by the large ones, the market was completely reshuffled. The distribution channels were digitalized—the entire logistics chain now is digital—and music is mostly distributed independently of physical media. Initially, the compact disc was just digitized music. But this was only the starting point of far more complex transformations and challenges. We can easily draw analogies to teaching and learning.

The term “e-learning” originally was open to include all three aspects outlined above—“the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration” [3]—, but most of the time it has been interpreted as establishing a strong connection with digitization and digitalization only—“e-Learning is an umbrella term describing any type of learning that depends on or is enhanced by electronic communication online using the latest information and communication technologies (ICT)” [8]. Today, in certain political discourses it is reduced to lists of “cool tools,” and working with learning management systems and all or some of their facilities during so-called online phases.

The advent of the terms “digital learning” and “digitally transformed learning” presents an opportunity for discussing teaching and learning processes by absorbing what is common practice in other fields of society, e.g., personalization and agility. Digital learning might finally make scalable personalized learning feasible, irrespective of specific technologies or devices. This way, digital approaches to HE could go beyond the use of devices and towards new learning experiences enabled through the use of technology. Technology itself would
not be the focus and the buzzword “digital” could actually open opportunities to rethink pedagogy.

The goal of HE during the 20th century has been to prepare students to survive in the “real world” for the next 30 or 40 years by giving them an education rather than a training for a specific job. However, as a university degree enabled students to get a decent job, which they would often keep until retirement, little emphasis was put on “learning how to learn.” In the last decades, this has changed: people rarely stay with one company for all of their working life; they may even end up working in completely different fields, as has been elaborated by authors like Richard Sennett [9, 10]. HE thus faces the challenge of specifically preparing students for life-long learning, i.e., providing students with the skills necessary for acquiring skills on their own.

HE has been tasked to train students on self-efficiency and adaptability to the requirements of the economy, i.e., on employability. In this context, the idea of basic competencies emerged. [5] Despite ongoing debates [7], this has had a huge impact on the development of HE. Competencies, not the accumulation of specific knowledge, are becoming—again—the goal of education, which had been neglected in the face of academicization and the resulting massification of HE: For most of the last century, European HE used to be the abstraction and generalization—the academicization—of specific contextualized situations and the pedagogical transfer to situations other than the original ones by ignoring both original and new contexts. Can the digital transformation help to re-contextualize learning at today’s HEI and thus help to overcome the problems associated with the massification of education?

Looking at situated learning [6] we find models in other areas: In vocational training for crafts (traditionally and still today in the Swiss and German dual system) apprentices learn from observing how the master solves a real task and then get the chance to try it themselves. The workshop thus serves as protected learning environment, while at the same time, master and apprentice together build real things for real customers. Similarly, if we consider the Humboldtian ideal of the university, we see learning from the experienced in a small setting: professors had a few disciples with whom they shared reading, thinking, and making discoveries. In both cases, teaching and learning involved very few people and happened in a specific context. In contrast, today’s HEI serve thousands of students. Individual courses run detached from any real-world setting with several hundred students at a time with only one instructor (and maybe a handful of teaching assistants).

Digital transformation offers new ways of respecting contexts. Technology helps with contextualization in learning to overcome the challenges of teaching abstract methods derived from concrete situations. Examples are theory courses in social history and social politics being transformed into complex settings of active learning. By using various e-dossiers and online assignments, students are set on an individualized path to acquire expertise in contemporary domestic social politics. The course leads up to a media platform discussion modeled on a popular local TV program, which can be reworked after the “show” and enhanced with feedback in various and differentiated ways. Contextualization matters, technology is just a minor aspect.

Proposals like using “tablets in classes” or “tools that let students interact with instructors in class” only perpetuate the mechanics of one-way teaching. Just as misguided are general courses on skills needed for the digitally transformed workplace, like modules on “critical
thinking,” maybe even deployed across curricula. We rather need to integrate these skills and competencies into all modules and courses, into all learning situations. If we achieve this, we are starting to actually transform education.

During the last century, learning in HEI more and more used to happen in isolation, the real world was excluded—partly due to the massification of HE. We call this pre-digital learning and understand “digital” as a proxy for “contemporary” or “reflecting current developments.” New, contemporary, and thus digital pedagogy reflects digital communication which converges with the real world. What is needed to realize this seems rather trivial: HEI have to transform curricula by doing exactly what they should teach students to survive in the real world, i.e., abstract from real-world situations to build meta-models; from those models derive concrete settings by contextualizing them with respect to relevant topics or situations. This way we can actually achieve a general idea of what “critical thinking” or “abstract thinking” mean—we build a model—, and by contextualization we then create concrete instantiations of “critical thinking in a discipline.” The latter step is the most important and probably also the most difficult one.

Michael Wesch [12] proposes to design learning as a structured process bringing the real world into a safe learning space. Learning should not aim to separate the learning environment from the real world; when we teach students in the “not-real world,” we do not prepare them to survive in “the real world.” Teaching should take place in the real world, or in a very accurate simulation thereof. Learning needs safe spaces to allow for failure and to encourage trial and error; as Wesch writes: “We just have to stop pretending that the walls separate us from the world, and begin working with students in the pursuit of answers to real and relevant questions.” [12] Today’s digital technology allows for the scalable implementation of ideas that used to be only feasible with small groups [2].

**Conclusion**

Digital transformation builds upon digitization and digitalization. Digitization is not trivial and there are still issues to be resolved, but it is a topic for specialists, as is digitalization. While everyone involved with digital transformation should have a general understanding of the underlying, fundamental technical issues, there is no need for all of us to develop algorithms or implement applications from scratch. These technical aspects require specific skills, but as experts’ skills they may remain distributed vertically in society.

Based on a sophisticated understanding of “digital,” we should develop an appropriate notion of “education” to deal with the ongoing digital transformation of society and its implications. For HEI, the central task is to model the complex networks of digital skills like critical thinking, media literacy, and cross-cultural competence, to then develop corresponding contextualized learning scenarios in the disciplines. The crucial success factor is the reunification of the—traditionally separated—real world and the classroom. Today’s challenge is to enable learning in digitally enhanced “learning spaces” that combine face-to-face and online interaction as well as protected “classroom learning” and real-world experiences. Digital transformation provides the tools and offers methods to turn this challenge into an opportunity. Only digital transformation skills in this sense will enable HE to keep up with real-world developments by extending contemporary pedagogical methods.
This leads us to a dialectic view of the learning process: it has to be protected, but real. Digital, i.e., contemporary, pedagogy should work on methods and concepts to support such processes by using contemporary, i.e., digital, technology.

References


