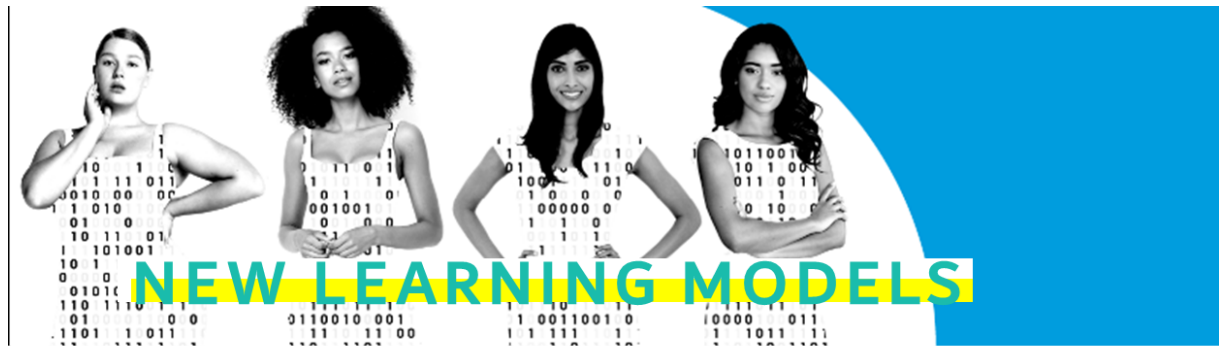




Learning models and curriculums are changing as we identify the skills the world requires in the 4th Industrial Revolution

Education needs to ensure it is training people with the skills and knowledge for the jobs of the future, or face redundancy. New models for post-secondary education will emerge to deliver outcomes required by the world in 2030 and beyond.

It was Eleanor Roosevelt who said “the future belongs to those who believe in the future of their dreams”, implying a certain “make-ability” of one’s own future.

Our collective future, and the power given to individuals to shape their own future, is to a large extent shaped by the concepts of our education system. Early on in life, school trains us in what levers and tools we have to shape our future. Knowledge is such a lever, of which large amounts are transferred to us in school.

But what was our future – now our present – is not what we were promised. Man has not been to Mars (Wired, 1997), food has not become obsolete (Ray Kurzweil, 2005), robots have failed to make the entire country’s population independently wealthy (Time Magazine, 1966), and the human foot has not morphed into one giant toe (Dr. Richard Lucas, 1911).

Trying to predict our future has always been a matter of crystal ball gazing, and with the 4th Industrial Revolution in full swing, the insecurity about our future has increased even more. The enormous amounts of information available today, the rapidity of disruption and the acceleration of innovation are unlike anything we have experienced before. So, how do we prepare the next generation for a successful future in the digital age?

Our concepts of education seem to be stuck in the era of the 2nd Industrial revolution, when the standard of a human’s worth was defined by knowledge and cognitive skills (IQ). Today’s educational concepts still continue to follow a highly one-size-fits-all approach, with rigid rules and predefined, academic plans that give students almost no room to develop their own talents and interests. Our educational concepts and their operating models need to be challenged and adapted in order to be able to develop the next generation of successful leaders; higher education is ripe for disruption!

In this article, allow me to introduce an idea, a type higher education system, that may inspire to update our current conventional higher education system towards a system of collaborative learning communities, for young adults to become problem solvers in a world where boundaries are disappearing, in which agility, creativity and innovation are required to successfully overcome the challenges the future has in store.

How did we get stuck with our current education system?

As society changes, it passes through revolutions. New systems evolve in each revolution. And after each industrial revolution, new types of intelligence surface, which become the new standard for a human's worth in this new system. The question is what type of intelligence do we need for our future, and, equally importantly, how do we successfully transition from one system to another and don't "get stuck"?

An interesting take on how our system is changing in a larger context, and what type of intelligence we need to adapt and thrive, is provided by the DQ Institute:

"We often say that a human has three components, the body, mind, and spirit, which constitute a person's physical structure and strength, ability to think and feel, and essential principle activating and influencing a person, respectively.

History tells us that every industrial revolution that brings new technological advances has also produced structural changes in societal and economic systems. When a society passes through a revolution and individuals in the society try to adapt to a new system, the focus of a human's perceived worth shifts as well. What type of humans can be most successful and prosperous by adapting into and thriving in a new system? Is it individuals who are strong in body, mind, or spirit? New forms of intelligence reflecting the evolving focus of a human's worth, have emerged after each industrial revolution, and have served as a framework for children's education, industry workforce development, and related government policies."¹

The revolutions of our society, and the human worth and skill sets to thrive in the particular system:

Year	Revolution	Main events	Focus on Human worth	Primary skillset
Today •	4.0	The coming together of digital, physical, biological and technological advances in an integrated fashion.	Spirit (values)	Digital skills
60's-90's •	3.0	Computer revolution: Mainframe computing (60's), personal computing (70-80's) and the internet (90's)	Mind (emotions)	Soft skills (EQ)
1870 •	2.0	Production at mass scale, fostered by the invention of electricity and the assembly line; Industrialisation	Mind (knowledge)	Cognitive skills (IQ)
1784 •	1.0	Invention of the steam engine; mechanical means of production made possible	Body	Physical

¹ DQ Institute, DQ Global Standards Report 2019 Common Framework for Digital Literacy, Skills and Readiness, dqinstitute.org

Sources:

DQ Institute, DQ Global Standards Report 2019 Common Framework for Digital Literacy, Skills and Readiness, dqinstitute.org

Klaus Schwab, The Fourth Industrial Revolution, London, 2017

As Prof Klaus Schwab, Founder and Executive Chairman, World Economic Forum, states: “The 4th Industrial Revolution brings innovations such as bionic humans, gene alteration technology, synthetic biology, and internet-connected brains.”²

“The 4IR will redefine what being human means.” Prof. Klaus Schwab

The technological advances of the 4th Industrial Revolution are said to leave 75 million current jobs obsolete until 2023, while creating 133 million new ones over the same period. These new jobs require new skills that allow humans to productively utilize technology.³

We also see a rise of the value of ‘spirit’, including wisdom and values. I.e. all things that a machine can’t do and a human can, are becoming increasingly important. These include: contextual understanding and insights, and values such as respect, kindness and compassion. Being human is the next big thing.

Can the capability to use and create with technology, combined with moral values be developed in young adults using the framework of our conventional education system? Maybe partly. Yet, where our current education system is largely focused on knowledge transfer, on rules and predefined academic plans in a one-size-fits-all approach and where failing is discouraged, it lacks essential elements for young adults to learn how to reinvent themselves over and over again – how to ‘learn to learn’, develop adaptability, and take ownership of shaping their own path to their future and dreams.

How do we pivot our education system to the future?

Our education concept is overdue for an update, but how can we realise this? Can we push the reset button on education?

Yes, I believe we can. One silver lining of the Covid-19 pandemic is that it has shown how quickly we can make radical changes to our lifestyles. Recent data shows that we have vaulted five years forward in consumer and business digital adoption in a matter of around eight weeks. Banks have transitioned to remote sales and service teams and launched digital outreach to customers to make flexible payment arrangements for loans and mortgages. Grocery stores have shifted to online ordering and delivery as their primary business. Schools in many locales have pivoted to 100 percent online learning and digital classrooms. Doctors have begun delivering telemedicine, aided by more

² Klaus Schwab, The Fourth Industrial Revolution, London, 2017

³ DQ Institute, DQ Global Standards Report 2019 Common Framework for Digital Literacy, Skills and Readiness, dqinstitute.org

flexible regulation. Manufacturers are actively developing plans for “lights out” factories and supply chains. The list goes on.⁴

Now is the time to change. We can define new principles for higher education and ensure that every decision is aligned with these principles. We can design an education system with the goal in mind to give students the tools and levers they actually need to succeed after they graduate. We can define success relative to one-size-fits-one criteria – or at least criteria that are aligned with the system we find ourselves in.

We can do all of the above, but do we want to? And how do we leave our current system?

We need to want it badly enough to make an actual change. And to get somewhere, we first have to decide to not stay where we are now. And for this we need to overcome a substantial amount of inertia, to abandon practices that are long claimed to be essential.

Peer-to-Peer learning

A not necessarily new, yet proven, effective education system, that may present an idea to take a step in the right direction of updating our overdue concept of higher education is Peer-to-Peer learning. Peer-to-peer (P2P) learning is learning through an online curriculum through rich, personalized human-to-human experiences.⁵

After a brief elaboration on P2P learning, I will illustrate how such a system can work using a real-life example.

P2P typically disregards the rules of the “old system”, i.e. the system of the 2nd Industrial Revolution, where efficiencies were gained through standardization and economies of scale. In the new system, the system of the 4th Industrial Revolution, consumer confidence in major institutions is low. Decentralized networks trade on trust and reliability, and are powered by declining transaction costs and ubiquitous connectivity. This ‘power shift’ from centralized to distributed models is underpinned by technology that supports trust based end-to-end transactions and changes in the role of citizens from consumers, to producers and creators.⁶



So P2P learning mirrors the dynamics of the 4th IR: no centralised institutions that aim for standardisation and economies of scale, like in the 2nd IR, but rather trust and confidence in decentralized networks based on trust-based transactions, powered by technology. The parties in these transactions can be consumer, producer and creator at the same time.

4

<https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-covid-19-recovery-will-be-digital-a-plan-for-the-first-90-days>

⁵ HolonIQ, Education in 2030, Five scenarios for the future of learning and talent

⁶ HolonIQ, Education in 2030, Five scenarios for the future of learning and talent

According to HolonIQ, in 2030, P2P has gone mainstream and will be an accepted way to live, work, learn and earn.⁷

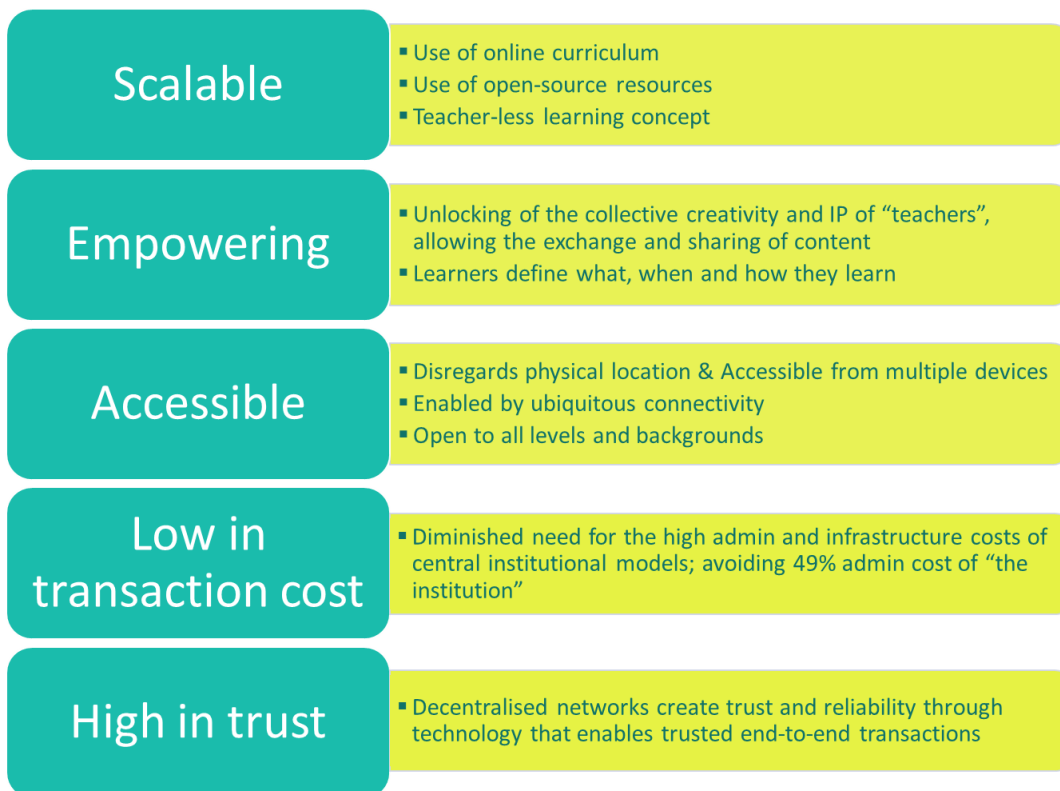
“By 2030, most professional and skills training occurs in the ‘alternative accreditation’ space where peer market rating systems dominate and which are outside the purview of traditional education regulators, who focus their efforts on the formal schooling sector.” HolonIQ

Changes to education in this scenario are less significant in the primary and secondary education sector, where the structure of the industry remains intact. Changes to post-secondary education are more pronounced as brand power moves from institutional to individual. Learners are more in control of what, when and how they learn, forcing institutions to reorganize their offerings and delivery to match market needs. Individuals collect micro credentials from a high number and broad range of providers, disempowering large multi-year institutions with bundled offerings. Rather than mediated by institutional brands as a mark of quality, students can also gain verification of knowledge from global experts in specific fields, including industry experts and professors. Micro-credentials are stored on the blockchain (e.g. Proofstack; Dicliplina) and learners construct their own collection of relevant knowledge, skills and experiences.

An overview of the characteristics of a P2P learning environment:

P2P learning is:

⁷ HolonIQ, Education in 2030, Five scenarios for the future of learning and talent

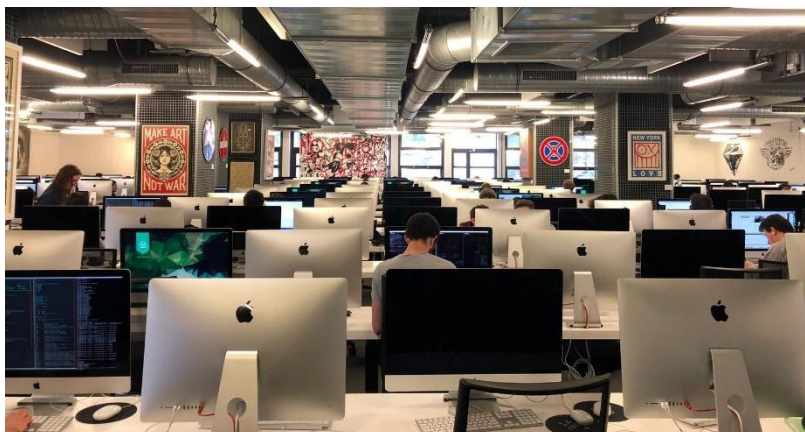


P2P is effective, flexible, just-in-time, personalized and ongoing.

Further, it helps to overcome Benjamin Bloom’s 2 Sigma problem⁸: Bloom found that the average student tutored one-to-one using mastery learning techniques performed two standard deviations better than students who learn via conventional instructional methods – that is, “the average tutored student was above 98% of the students in the control class”. We certainly need to address the capacity issue that comes with dedicated 1:1 learning for scalability and efficiency reasons, yet, P2P learning partly benefits from the advantages of the Bloom effect.

An example of Peer-to-Peer learning for tech skills training

How a Peer-to-Peer learning platform could work for young adults, developing them into the agile problem solvers that will help us overcome the challenges that the 4th Industrial Revolution has in store, can be illustrated with the real-life example of “42”.



“42” is a renowned coding education from France, providing a world-class curriculum for tech

up Instruction as Effective as

skills-training on a P2P learning platform, accessible for everyone 18+, regardless of background. It is a non-profit, private, free programming school at higher education level.

The innovative educational concept relies on project-based peer learning - without books, classes or teachers. At 42, what counts is talent, willpower, ability to learn and to solve problems. Selection is purely merit-based – it's automated – and certifications or grades from previous schooling or a perfectly manicured CV are not considered for the selection of candidates.

Depending on their interests, students can specialise in different areas. Graduates will have the choice between a self-directed working life as entrepreneur or a well-paid job as software engineer, security specialist, AI specialist, project manager, video game developer or web developer. The statistics show that 97% of graduates find a job after "42".

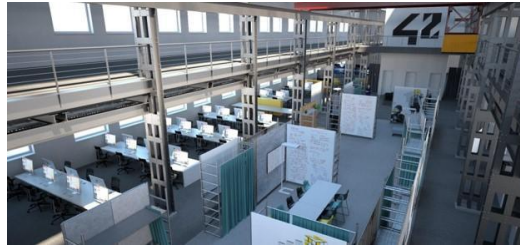
Due to the scalable model (no teachers) and 24/7 opening hours to let creativity flow freely, an average 250-computer campus has the capacity to train between 400-600 students simultaneously, who collaborate and all evaluate each other. The curriculum takes approximately 3 years. This means, an additional 150-200 additional software engineers and AI specialists will enter the market, per campus, per year.

About the 42 Network

The first 42-campus was founded in Paris in 2013 with the vision of fostering social mobility - making coding training accessible for all - and meeting the increasing demand for tech talent. The 42-network now comprises 33 locations in over 20 countries with currently around 10,000 students. The peer-based learning model is continuously being updated to reflect current and future needs of the tech world and making sure everything that students learn is 100% relevant.

In Germany, "42" will open 2 campuses early 2021, one in the South, in Heilbronn, and one in the North, in Wolfsburg. See also www.42heilbronn.de and www.42wolfsburg.de.





Conclusion

We will never be able to predict our future, and the combination of new technologies and their interaction make the 4th Industrial Revolution fundamentally different from previous revolutions, further complicating how we are to shape the transformation of our outdated education system.

In today's Covid crisis, the focus is on saving jobs. But for the day of tomorrow, when the recession following the Covid-19 pandemic recedes, we need to build resilience. We need to be ready for a post-Covid, highly digital world. Let's tie the need to create jobs in the 4IR and to revive sagging economies to the need to upgrade and update our concepts of education. Education is a critical infrastructure to create jobs for the next generation, giving them the tools they need to do the jobs that we have never heard of today, and to create the society that they wish to live in.

What can you do differently tomorrow to support the change?

As today's leader you can act as a role model, by supporting the change, paving the way rethinking how we develop, and equally important, hire talent. By daring to access a wider talent pool for recruiting, screening for skills, character and drive, rather than for diplomas of well-known universities and a perfectly manicured CV. It will show the world that new education systems can be successful. It will be our best chance to successfully steer through what is called by Klaus Schwab "the biggest challenge of humankind": the 4th Industrial Revolution.