As we try to attempt the very humbling task of thinking about what the future might hold for technology (and innovation) in education, it is important to remember that the future can rarely be extrapolated from the past. Tim Urban has a great post on artificial intelligence where he introduces a timeline of human progress. What he points out is that when we are just left of any disruption the world seems pretty flat and you can't see, let alone predict, the radical change in the horizon that is just a step away. This reminds us that the present and the past are not very good predictors of the future. A little ‘food for thought’ and a hint that what follows should be taken with a grain of salt...

Figure 1 – Tim Urban on the future (source: WaitbutWhy.com – The AI Revolution)
So, before we (intelligently) attempt to discuss the future of education, and technology’s potential role in education, we need a bit of context. And here are three key dimensions we need to take into consideration in order to set the stage for some of the ideas that follow.

1. Disruption: in any sector, evolution seems quite peaceful until it’s not.

As the hockey stick diagram above illustrates quite effectively, education continues to look today much like it has for, more or less, the last hundred years. Make that fifty years for business education. But when disruption strikes, and we all know that the winds of disruption are gathering, things change very quickly. Facebook didn’t exist fifteen years ago and it is now one of the main sources of information on the planet that influences what we read, what we see, and, ultimately, what we think. It doesn’t feel like ‘education’ but it definitely influences what people think and even how people think - which, for many, is a working definition of education.

What will the ‘uberisation’ of education look like is a tough question to answer today. If we think in uberistic terms – underused assets (professors and classrooms versus drivers and cars) that can be harnessed to educate (versus transport) - it is clear that, paraphrasing Kurzweil, the singularity is potentially near...

2. Employment: education has always been driven by ‘employability’.

As we have moved, as a society, from agrarian to industrial to service-based to knowledge-based to network-based economies, our educational system has adapted to fill the needs of employers and to ensure the employability (to the extent that is possible) of graduates. But what happens in the not-so-distant future when robots or computers start replacing a significant swathe of modern jobs? With jobs at all levels of the economy now threatened, from trading rooms to factory lines, what will the role of education be in what some are calling a post-work future? Should the link between employment and education be broken, or should education radically change, as some suggest, to teach things that seem to be out of the reach of computers and robots - creativity, socialisation, rebelliousness, character, ethics, free will and values? Or should everyone just learn to code?

No easy answers to these questions.

3. Artificial intelligence: AI is a total game changer.

For the time being AI is ‘cute’ – from Watson to Siri to chatbots - most of us don’t really see the disruptive potential of AI yet. Those that do, from Stephen Hawking to Elon Musk, seem quite scared of it. If today a robot seems to have the intelligence of a well-behaved child, the road from a simpleton robot to what AI specialists would call a “super-intelligent” robot (i.e. smarter than all of humanity put together) is probably only years away.

What role education plays when information and intelligence are no longer relevant skills for humans is not clear.

“Imagine learning with virtual and augmented reality, using software that seamlessly integrates artificial intelligence and adaptive-learning.”
TECHNOLOGY MANAGEMENT & INTEGRATION

Now that we have a bit of a backdrop to some of the aspects that could radically change education as we know it, in the medium or long(er) terms, here are my best guesses to how education will evolve in the near future.

Integration of technology into the learning experience

Even if we do not know all of the technologies that will affect the learning experience we can already see the rise of technology in the learning process. From online learning to real-time fact-checking to in-class smartphone polls to smart boards, the beat goes on as they say. Recently I met with a Paris-based start-up, Sensorit, which has developed Yellow – an interactive whiteboard that allows you to do everything you could do with whiteboards, paperboards, post-its and more on a tactile screen. What’s more, multiple people can interact with the screen physically on-site, while a potentially unlimited number of people can interact with the screen from around the world via tablets, computers or smartphones. Available today, already appearing in both boardrooms and classrooms, this is not something we need to wait years for.

Artificial intelligence and adaptive learning

We mentioned bots, or chatbots, earlier. These are basic programmes (algorithms) that interact with humans in a human-like way. ELIZA, a virtual psychologist, was the first ‘chatterbot’ (created by Joseph Wiezenbaum), has been joined by a long list of chatbots that can inform you about the weather, sports, news, recipes, shopping, fashion and a growing list of subjects. None other than Bill Gates himself, in an interview with The Verge in April 2016, declared that thanks to “dialogue richness,” a chatbot other than Bill Gates himself, in an interview with The Verge in April 2016, declared that thanks to “dialogue richness,” a chatbot can become a virtual “tutor that can walk [students] through even the toughest, most subjective topics.”

Already programmes like myBlee, developed by friends of mine, are teaching kids around the world mathematics at their own speed. Using AI and applying the pedagogical approach called ‘adaptive learning’, the software speeds up or slows down, offers different content to different kids, based on their own style and speed of learning. The learning process literally adapts to the learner.

Several schools and school systems around the US are adding myBlee to their curricula or considering doing so. It is easy to imagine how today myBlee teaches mathematics, tomorrow calculus and tomorrow big data... and it is easy to imagine hundreds of other start-ups around the world trying to do the same with other subjects.

Augmented reality

Think Pokemon Go in the Louvre. Enough said.

Virtual reality

Earlier this year I spent a weekend in Madrid and happened upon the IKEA innovation lab there. Without leaving a small room three metres by three metres wide, I went scuba diving, touched a whale, and then redesigned a kitchen. The first part was fun, the second part was a glimpse into the future. Virtually design your kitchen, change materials, change colors, walk around your (future) kitchen, open drawers, cook on your oven, see the kitchen from different perspectives and then, if you are happy with it, click on ok and order. The future of commerce, but possibly also the future of education. Don’t tell me about supply chains or factories or warehouses or data centres or startups, let me experience them directly.

Gamification

Make acquiring skills fun, create mini experiences, offer incentives and provide immediate gratification – so the thinking goes - and ‘learning’ becomes a desired activity, or even a by-product of play.

Immersive experiences

Imagine learning with virtual and augmented reality, using software that seamlessly integrates artificial intelligence and adaptive-learning, and you can easily see where education is heading. Forget about learning the facts of the French Revolution by heart, upload it to your VR goggles and storm the Bastille yourself. This is where Benjamin Franklin’s words take on their full and modern meaning: “Tell me and I forget, teach me and I may remember, involve me and I learn.”

Ubiquity and anytime anywhere learning

Nearly all of us are connected 24/7 and those that aren’t yet will be able to soon enough if Google and Facebook have their way. And thus learning will be a 24/7 option anywhere on the planet. We’re already pretty darn close.

Robots and robotics

There is a lot to be said about this subject and just this could be an article on its own. Let me just relate two projects I have been involved in as a mentor at the École des Ponts, one of France’s most famous Grandes Écoles. As part of the year-long projects that engineers undertake as part of their curriculum, some have a choice to work with a very simple robot called Nao that can be programmed to do things such as a short breakdance choreography, ask and answer questions, etc. Among the projects that were developed in the last couple of years, one group of students showed how Nao could be used to educate autistic children. Another group showed how Nao could do product demonstrations and teach consumers about how to use products. The leap from here to a future in which robots fill the role of (specialised) professors or tutors is not that big.
So after this rather long preamble, one might wonder where we are heading. What will schools look like and what role will faculty play in this highly technological future? The honest truth is that I don’t know. But I can guess.

What will schools look like?
I see two new models emerging:

The ‘incubator’ school
In this ‘model’, I imagine that schools - from nursery schools to business schools - start to look more like start-up incubators, complete with FabLabs, maker spaces, creativity spaces, project rooms, etc. The learning will be primarily project-based and the emphasis will be on collaboration, project management, learning to learn, and as-needed skill acquisition and autonomy.

The virtual school
Using modern technology, like VR goggles, the benefits of physical presence can be replicated to a certain extent virtually without reducing the participatory and collegial aspects of learning that still predicate for the advantages of herding students into a classroom. The result is a future online and distance learning experience that has many of the advantages of the presence-based learning experience of today. In this model, immersive experiences can be the dominant method of learning. Imagine corporate/institutional visits, ‘international’ study trips, meeting with decision- and policy-makers, and the like being offered regularly throughout any curriculum, rather than being a rare occurrence.

What role for faculty?
As the Dean of a business school and as a professor, the future role of faculty is naturally one that has received some thought. I hate to quote Bill Gates twice in the same article but here goes, “We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten years.”

So, using this timeline as a guide, I would suggest that within the next couple of years we will not see too much change. More technology will sneak into the classroom but more as a novelty, ‘cute-tech’, rather than anything disruptive. Professors will still be called as such and will continue to ‘teach’. Within five years, technology will start to impact education, call it ‘real-tech’, and professors will increasingly move to a facilitation role. As an aside, some forward-thinking professors are already taking/advocating for this approach. In ten years I imagine that education will be technology-based, call it ‘ubiqui-tech’, with virtual reality being a key element. Professors, if they are still referred to as such, will probably be relegated to the role of content curators and mentors.

So that is my vision of the future of technology in education. What is yours?

Figure 2 - The Evolution of Education over the next ten years (Source: Alon Rozen)

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BIOGRAPHY
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