PART 4: TECHNOLOGY DISRUPTORS IN EDTECH
The E-book is divided into four separate parts, with each part providing insights from 17+ thought-leaders and students:

Following are the Questions we asked our speakers:

Part 1 - What do you believe the future of Education Technology looks like?

Part 2 - What technologies does your school utilize and how has it affected learning outcomes?

Part 3 - What according to you are the biggest challenges in implementing Education Technology? Why?

Part 4 - Which disruptive technologies are on your radar?
Which disruptive technologies are on your radar?

Jon Dron,
Professor & Chair, School of Computing and Information Systems, 
Athabasca University.

The biggest disruptions facing us are not digital, though they are enabled and catalyzed by electronic tools and technical standards. Perhaps the biggest two disruptive technologies on the horizon are changes to fixed-length teacher-led courses, and the disaggregation of learning and assessment. Courses and assessment are so deeply embedded that we seldom even see them as technologies, but they are at least as much so as whiteboards and computers. The change to courses is in part catalyzed by the ‘failure’ of MOOCs, the completion rates of which provide compelling evidence that, in the absence of coercion, the traditional fixed-length fixed-outcome course makes very little sense. The course - one of our most cherished technologies - is, and has only ever been, a compromise driven by the laws of physics and convenience of administration. Pedagogically, it is an incredibly bad way to support learning, notwithstanding occasional saving graces like communities by default. Online learning is changing that. We have already seen a large drop in average MOOC size, as well as a large growth in smaller-chunk learning, from Wikipedia to the Kahn academy, as well as smaller chunk qualifications like nanodegrees etc, and this is set to massively disrupt our traditional educational forms as we take those lessons on board. A move from a model of teacher-control to one of learner control is perhaps the most important thing digital technologies provide and is their most disruptive consequence, which happens whether we want it or not. Once we have got rid of the problem of the always illusory teacher-control paradigm, assessment follows. If learners are explicitly following unique individual paths, we can no longer think in terms of sets of uniform learning outcomes when dealing with accreditation.

There will be a move to more use of badges to signal fine-grained competence, social endorsements of learning, and aggregate portfolios that pull together disparate learning, along with devaluation of traditional credentials. Hopefully, this should herald a move away from summatively assessing and, especially, grading learning as an umbilically linked part of the learning process. Perhaps the biggest problem with the traditional educational model is that certificates, grades, and accreditation have become the purpose rather than the sign of learning. Binding assessment to learning creates untenable power relationships and, worst of all, makes motivation extrinsic to learning. Extrinsic motivation always crowds out intrinsic motivation, sometimes completely. So, traditional education is fundamentally concerned with overcoming problems of its own making; it demotivates by design, so much of it is concerned with trying, often unsuccessfully, to restore what it has taken away. Books once disrupted that model though eventually came to reinforce it because they provided replicable uniformity. Online learning blows it out of the water. It is taking a while for formal education to catch up with that reality, but we can and we must.
Which disruptive technologies are on your radar?

**Nathalie Lemelin,**
Head of Innovations in Teaching & Learning,
**Lower Canada College**

The disruptive technology that is on my radar is white board paint. We are in the process of transforming some of our Middle School classrooms with it. Having three walls in the classroom painted with it, combined with the camera feature on the iPad has allowed us to create unique learning environments and we are experimenting a new pedagogy based on “Visible Thinking” (David Perkins, Project Zero, Harvard Graduate School of Education).

**Farbod Karimi,**
Chair, Digital Initiatives and Academic Educational Technologies,
**Algonquin College**

Social networking, wearables, cloud computing, eText, open educational resources (open access materials).

“It’s on the cloud,” a phrase that is often heard these days, has evolved to an environment in which students and faculty can connect and work collaboratively with each other in real-time, regardless of location.

Virtual and Augmented Reality – With the rise of simulation based systems and hardware (Google Glass & Cardboard, Oculus Rift), virtual reality has become a reality. This type of technology will open the world of education into an endless range of possibilities for our students. We’ll have the ability of applying immersive learning in any environment of our choosing.

Embedding teaching into intelligent objects in a world of ‘Internet of Things’ might possibly be disruptive, leading to ‘teacher-less learning’ scenario. The future of education is approaching an era of personalized learning, and the technologies to identify and emulate individualized needs might evolve as a matter of fact - deviating from creating uniformity to solve common problems.

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Which disruptive technologies are on your radar?

Garth Nichols, Director of Teaching & Learning, Bayview Glen

We are using the MS Surface Pro 3 and will continue to do so. I feel it is a great hybrid innovation to capture the imagination at this time. I think the real disruption is in the space of app development and software. I am keeping my eye on Edusight and Sesame HQ as disrupting the assessment space in education. I am looking at JoeZoo disrupting the feedback space through their Google Docs extension. These are three companies that recognize that education is changing and that teachers, students and parent alike are now demanding a different experience because it is possible.

Beth Peterson, Branch Manager, Division of Innovation and Program Engagement, Kentucky Department of Education

Disruptive technologies that we in Kentucky are following and have some involvement in include exploring the use of time and space in ways such as sharing teachers and courses across school/ district/ and state lines; any technology that deals with digital and blended learning; and removing attendance hurdles through methods such as digital video, window into the classroom, etc. Other areas of exploration include methods for helping students and teachers get to all resources and web tools with one safe and secure identity, and implementing strategies and best practices for securing student data. Additional areas of interest in educational technology include methods in which students can experience and even create learning events through wearable technologies, 3D printing, the Internet of Things, and virtual, augmented, and immersive realities.
Which disruptive technologies are on your radar?

Jo Axe, Director,  
School of Education and Technology,  
Royal Roads University

Perhaps rather than disruptive technologies we should talk about innovative technologies. We have seen an increase in the use of online technology in recent years; how can we continue to increase accessibility for those who live in isolated areas, or who do not have the time and/or financial resources to enter full-time post-secondary education? With its inception in the late 1960’s, the Open University in the UK aimed to widen access by using TV and radio programs, thereby allowing individuals who would not have been able to pursue higher education the chance to obtain a degree. This is just one example of innovation positively changing lives; over 50 years later, we see mobile technologies used by students to retrieve their classroom materials, to engage with others, and to access numerous educational resources. Let us look at how we can gain momentum in the use of mobile technologies to increase participation in education and continue to widen access.

Matt Devlin,  
Learning Technology Specialist,  
University of Toronto, School of Continuing Studies

One of the most exciting areas in education technology is the rapid growth of elearning and mlearning. People have been learning through human-computer interfacing for decades, but current elearning can be clunky and look dated. Learners are savvy to contemporary web design and functionality standards, which can be at times difficult to producing using current rapid elearning software. The opportunity for rapid, custom elearning that looks and functions like a web page—with highly intuitive navigation, clean visual design, and fully responsive design ready for use on any device—could radically change the face of online education, not to mention education as a whole.
Which disruptive technologies are on your radar?

Gina Alexandris,
Director, Law Practice Program,
Ryerson University

In terms of a general technology, online assessment/evaluation tools and games/gamification are what I am interested in.

However, in terms of disruptive technologies within the legal profession (as our program straddles both areas), there are a number of emerging opportunities that I am excited to learn more about and begin to determine how they will impact our graduates. These include online tools and applications that support the consumer/client resolve legal problems better (eg apps that help provide answers online); automated tools (our candidates use Clio for file creation, client billing and calendaring...much different than what was done 10-15 years ago); and legal research (while there are two leading online legal research platforms, there is also a great interest in seeing how ROSS, a new artificially intelligent attorney based on IBM’s Watson, might disrupt the profession).

Greg McLeod,
Principal,
John A. Leslie Public School, TDSB,

Google cardboard and other VR devices. These have real potential in changing how students interact with a digital world. The opportunities to use these devices to change how students experience learning will be radically different from other advances in education we have seen. If students can be in immersive environments where they are experiencing virtual exploration (of a place, period of time, inside an object like a heart) this will dramatically change how teachers plan for student learning. If one teacher is using a textbook approach and another is tacking advantage of technology to create rich, engaging and deeper learning experiences for students the pedological divide is going to be huge. For some teachers this is going to change their whole approach to education and this is going to be interesting how some are able to adapt to meet this disruption.
Which disruptive technologies are on your radar?

Brenda Massey-Beauregard, Program Manager, Interpersonal Skills Teaching Centre, Ryerson University

I’m always curious about advancements in virtual reality and mobile computing technologies and how they interact with various course management and e-learning platforms. Our ultimate goal would be to use the technology to provide the same visceral experience students have when they participate in one of our simulations and receive feedback from the actors in a traditional classroom setting. Using a web conferencing tool to deliver one-to-one experiences such as the simulated client interviews for the LPP are just the tip of the iceberg.

Jill Cummings, Associate Dean Faculty Development, Yorkville University

More simulation and e-game technologies increasingly play a role in activities and programs with Yorkville University.

Leonora Zefi, Manager, eLearning Initiative and Course Development, The G. Raymond Chang School of Continuing Education

Open research, Adaptive Learning Technologies and OERs.

Jonathan Obar, Assistant Professor of Communication and Digital Media Studies, The University of Ontario Institute of Technology

Digital data resistance technologies. Data self-governance (i.e control) in the Big Data universe will soon be revealed to be among our biggest challenges.
Which disruptive technologies are on your radar?

Richard Saunders,
Technology Coordinator,
Avon Maitland District School Board

I love the Myo. It is an armband computer controller from Thalmic Labs. I think this device can help students and teachers interface with computers in new and powerful ways. It might also have impact on helping kids with barriers to communication. I am excited to see what comes next.

Roderick Turner,
Professor, School of Information & Communications Technology,
Seneca College of Applied Arts & Technology

IoT will force our hands in terms of ubiquitous access, and the impact of ‘everything smart’ will change the environment in which graduates must learn to operate.

Katherine Turner,
Writer/Trainer/Facilitator, Interpersonal Skills Teaching Centre (ISTC),
Ryerson University

In all honesty, I do not have a radar for technology. I am the one running, barely able to keep up with what is here now. But I do dream of the best for students and society in general that technologies will continue to be tools that provide ways to communicate, to manage information and to reveal shared experience.
Which disruptive technologies are on your radar?

Paul Brown,
Teacher, Computer Studies,
North Park Secondary School

From a general perspective, I’ve already covered a couple earlier. Autonomous vehicles, artificial intelligence, and 3D printing are the three biggest. That and new energy sources that make energy virtually free and inexhaustible. I think there’s a huge possibility that within 100 years (and probably way less), technology could take over every job done by humans. The danger is that very shortly after that, artificial intelligence could decide that the biggest downside to life on earth is the human species, and that we need to be eliminated, or at least locked up and kept from doing more harm to the planet.

From a purely educational perspective, I don’t see a technology by itself that can replace certain aspects of teaching. I now spend almost no time lecturing during the course of a semester. But I show TED talks that I think the kids need to see, and give “Brown Talks” about my life experiences (which they actually like more than the TED talks.) They currently still need someone, with all the technology available, to define the “big questions,” map out a path to the resources needed to solve that problem, ensure that they stay motivated and on task, etc. I think the global issues I covered earlier are a bigger threat to teaching purely by virtue of the effect they could have on life in general, which in turn would cause a radical rethinking of what education should look like. At this point I don’t know what life without a job would look like, so I don’t really know what education would be required to live in that kind of world. Although I do have some ideas.
Which disruptive technologies are on your radar?

Neil McClung,
Teacher,
Peel District School Board (PDSB)

It would depend on how one defines the word “disruptive”. Some might see the troublesome, unruly definition of the word as a descriptor of what happens in a classroom that opens itself up to the use of unregulated tech…I, on the other hand, see the word as a positive, defining the innovative and groundbreaking rather than the disorderly. In that light, any technology that allows students to wander beyond the borders of the conventional - that challenge the status quo and allow different perspectives to be understood - is “disruptive”. The fascinating aspect of this is that it isn’t so much the technology that drives the “disruption”…it’s how the technology is used and presented. Email can be disruptive if it’s a Grade 6 student writing directly to the Governor of Nebraska asking for his view on oil pipelines running through their state from Alberta. A calculator can be disruptive if used to calculate the poverty rate amongst students in a certain grade level. The hardware/software/peripheral is only as potentially disruptive as how it is used with informed and well-considered pedagogy. The real question is - How can teachers use technology to make their pedagogy disruptive, while keeping the focus on the true curriculum - the students?
A STUDENTS PERSPECTIVE

What do you believe the future of Education Technology looks like?

Ahmed Tahir,
President, Humber Students’ Federation,
Humber College

Virtual Reality technology is something I’ve been following quite closely. The possible applications of it in education are tremendous. Being able to fully replicate a situation a student may face on the job in tantalizing, and I can see it being very effective in Emergency Services training.

Cormac McGee,
Vice President Education,
Ryerson Students’ Union

Today everything is getting crowd sourced. Just like Uber or Airbnb, crowd sourced educational apps and technologies are becoming more common. Whether it’s trading notes from different classes online or finding tutors through a Tinder-like service, these peer-to-peer help networks could make some student services offered by institutions less relevant.

Jasmine Denike,
Vice President External,
University of Toronto Students’ Union

I can’t say that there are any that are currently on my radar when it comes to my position at UTSU, but (if I’m understanding this correctly) I would say that self-driving cars is something that I’m currently paying a lot of attention to, based on their “need” and whether or not, in an accident, they choose to protect the driver or the pedestrian/cyclist/etc.
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