Position Paper TU Delft

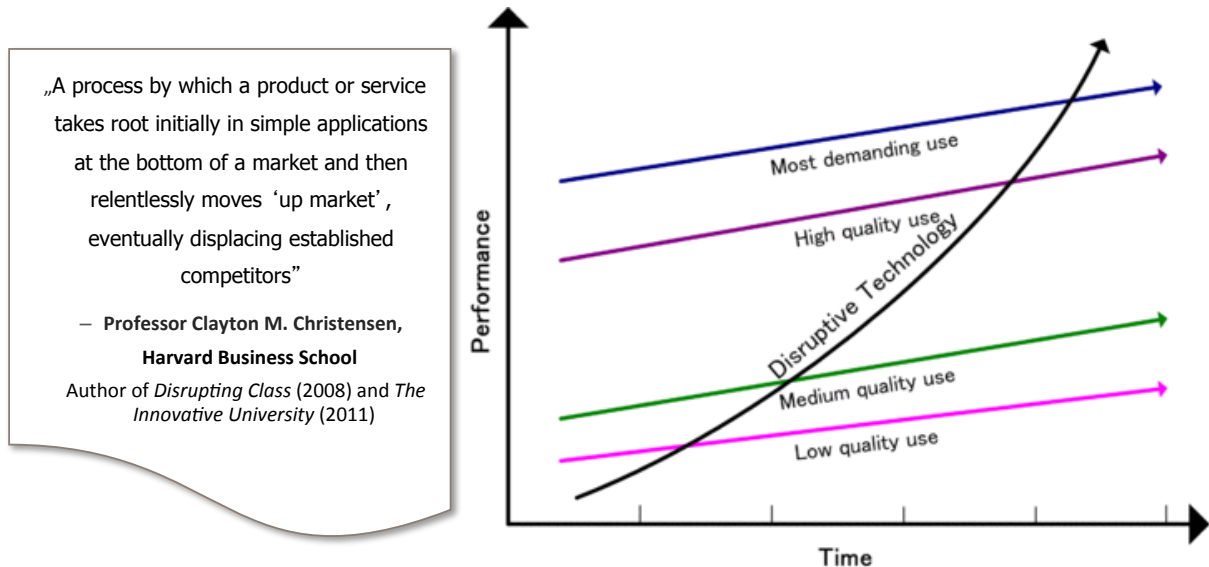Authors: ir. Willem van Valkenburg, drs. Timo Kos, drs. Martijn Ouwehand

Introduction

Delft University of Technology (TU Delft) is a traditional brick-and-mortar university in the Netherlands. Our research is inspired by the desire to increase fundamental understanding, as well as by societal challenges. We encourage our students to be independent thinkers so they will become engineers capable of solving complex problems. Our education focuses on education in engineering, science and design. The university hosts 20,000 students (Bachelor and Master) and 2,400 PhDs.

Since 2006 TU Delft has invested substantially in the development of open and online education. This includes OpenCourseWare, MOOCs, Online Education, Professional Education and Blended Education.

Higher education bubble and disruptive innovation

There are two dominant views on the nature of the recent developments. The first view is that MOOCs are a media hype that will pass and result in widespread disillusionment. The media attention for MOOCs certainly does show some characteristics of a media hype. In the USA this is caused by deep concerns about the continuously rising costs & high inflation rates for college tuition fees and the resulting high debts for individual students. Because of growing unemployment rates amongst higher educated professionals, there is an increasing tension between the cost of a university degree & the socio-economic value of it. Parallel to this runs the debate about the effects of the financial and economic crisis on state budgets and the sharp increase in the number of states that have trouble collecting outstanding student loans (Peter Thiels 'higher education bubble' thesis).

Others analyze these developments from a business perspective and view it as a disruptive innovation that will create a new market and value proposition, that could even develop into a competitive offering for parts of the current campus education by elite universities. The main proponent of this view is Clayton Christensen. He views online education as a classic example of disruptive innovation and the recent developments as the acceleration phase in a long term development of more than 2 decades.

„A process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves 'up market', eventually displacing established competitors"

— **Professor Clayton M. Christensen, Harvard Business School**

Author of *Disrupting Class* (2008) and *The Innovative University* (2011)

To visualize the potential impact and future scenario's of the current online (r)evolution in higher education we developed the following analogy with the evolution of the automobile industry. It illustrate what the future of online education might bring for universities, the partners they collaborate with, and future student behavior and expectations:
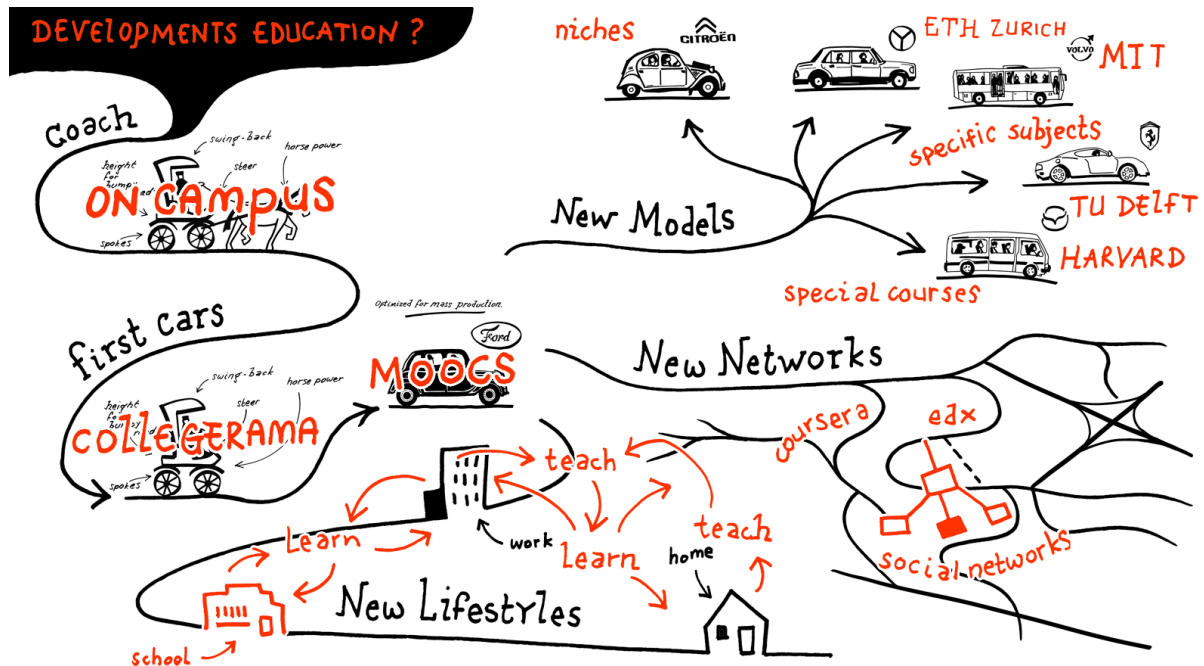
From this perspective MOOCs signal the beginning of the transition to mass production and globalization of higher education (with an analogy to the impact of the first mass produced Ford), and the beginning of a surge in new educational models, networks for delivering these new educational models, and new types of behavior amongst global populations of learners. MIT has written a study on the future of MIT education in which it expects education to become 'unbundled' as in other industries that have witnessed the impact of digitalization (see http://future.mit.edu). Currently it is hard to predict if this will happen and what models will become successful, and what role universities will play in delivering these models. What we do see is that it is important to gain broad and hands-on knowledge of which models work and which don't, to be able to adapt to these new developments when needed.

TU Delft Extension School

TU Delft has chosen an early adopter strategy. This ambitious strategy offers most opportunities to establish a top-tier online reputation as an innovative teaching and research university, to leverage excellent starting position the TU Delft has in the domain of open & online education, improve the quality and effectiveness of both online & on-campus education, and is in line with the ambitions of the Roadmap 2020 of the TU Delft to stay a leading academic research university in the fields of science, engineering & design.

Part of this strategy is the set-up of the TU Delft Extension School. This school bundles all our activities in open and online education. To position this within the university the school has appointed a Dean and a Director of Open & Online
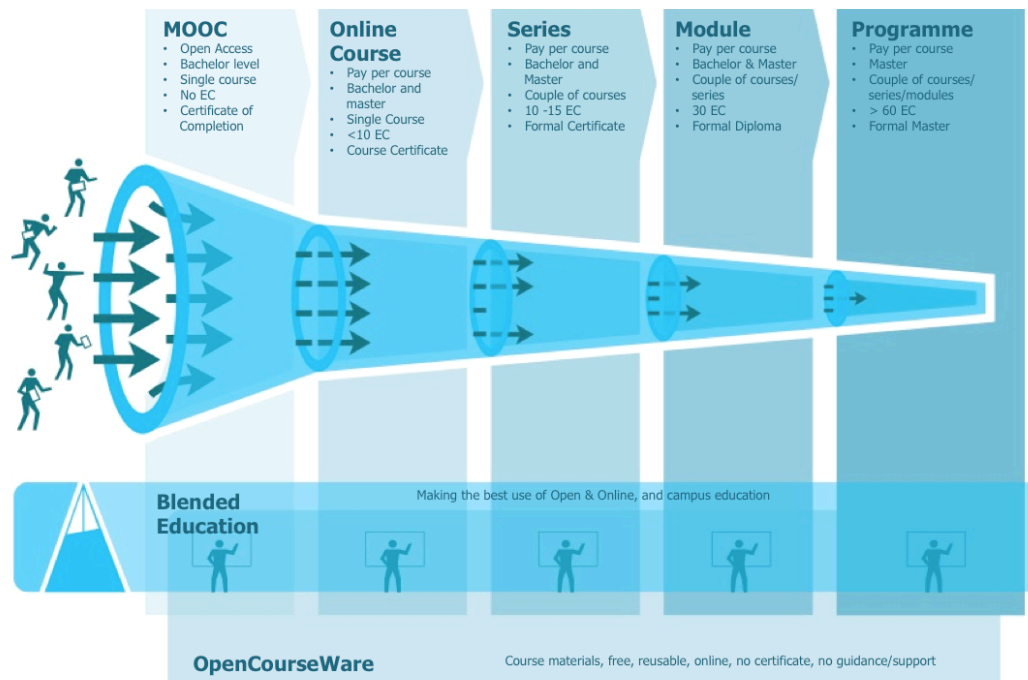
Education to lead this initiative. The innovation programme to realize an Extension School for Open & Online Learning has 4 main programme lines:

- Research & Innovation
- Faculty & Student Services
- Production & Delivery
- Business Development

Together with all the faculty involved in open and online education we have set ambitious goals for the next two years.

Business Model

Early on we have recognised that if you only consider MOOCs there is no sustainable business model for a university. This is why we broadened our scope and consider our open education activities as part of our funnel towards paying (online) students.

From the production side, we will develop the content once and reuse the content in different courses for different target groups, such as a MOOC, online course, blended course on campus and publish the content on OpenCourseWare.

The first signals we have indicate that this model is working. For example 0,1% of our MOOC students applies for a master programme on campus.

We are also investigating new business models, such as sublicensing of MOOCs to other universities and platforms.

Open Licensing

One of the pillars of our long-term strategy is that we have a strong commitment to 'open'. This entails that we license our course materials with an open license (CC-

BY-SA-NC) to enable reuse of TU Delft course materials by others and thus increasing accessibility to Higher Education, answering the worldwide demand for education. This is also the default license for the course content of our MOOCs. We publish the videos and other learning materials under the same open license (CC-BY-SA-NC) to make it available to learners all over the world. Off course there can be exceptions due to copyright and privacy restrictions for some course materials.

Because we also have to come to a financially sustainable business model for our open & online education (we have to cover our costs), we use the Non-commercial clause. We do not uphold this condition to prevent re-use. We do this to make sure we can protect the quality and prevent (intended) misuse of our content.
This means that institutions that want to charge money to their students for the access to our course materials have to ask TU Delft for permission and get a license agreement.

The NC-license gives us the opportunity to also sublicense our MOOCs to third parties, such as the Arabic platform EdRaak and Chinese platform XuatangX. Both organisations are aiming for increasing the reach/accessibility of Higher Education to regions with little access to high quality university education. Central to our licensing policy is that the course materials such as videos & texts remain freely accessible to all, while additional services for education, teaching efforts and certification can be licensed for a fee.
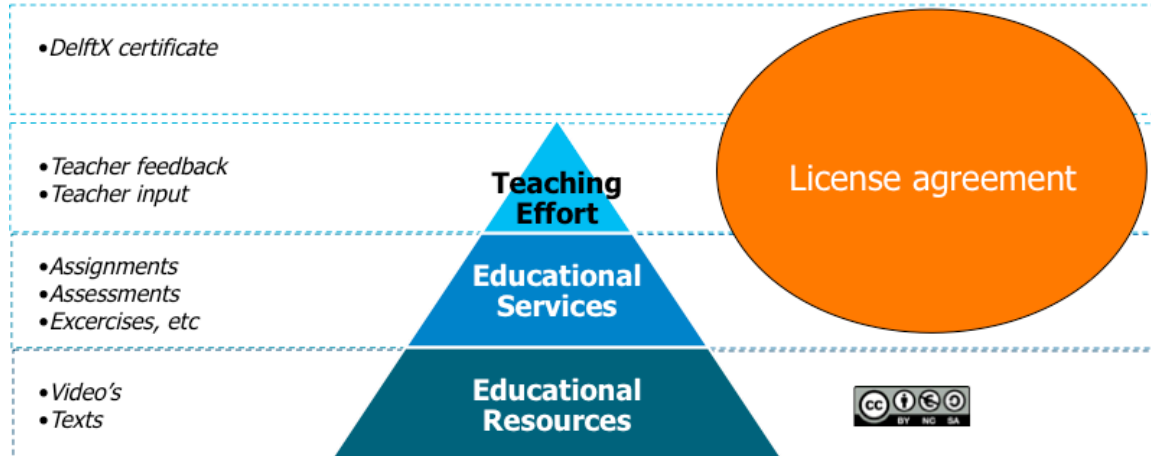
Model derived from: Mulder, F. & Janssen, B. (2013). Opening up Education, in Trend Report: Open Educational Resources 2013. Published by the Open Educational Resources Special Interest Group. pp. 36-42

International Cooperation

Education is more and more becoming a global market. International cooperation is essential for all universities that want to be global leaders.

TU Delft is cooperating with many other universities to advance in open and online education. These are the most important partnerships with regards to open and online education:

Global
- TU Delft is member of the **EdX Consortium**. Anka Mulder, Vice President of Education & Operations of the TU Delft, is on the University Advisory Board of the Consortium. EdX consists of 55 universities and organisation offering MOOCs on the edx platform.
- TU Delft is sustainable member of the **Open Education Consortium** (formerly known as the OpenCourseWare Consortium). The Open Education Consortium is a worldwide community of hundreds of higher education institutions and associated organizations committed to advancing open education and its impact on global education.
  Willem van Valkenburg is member of the Board of Directors. Anka Mulder is the former president of the Consortium (2011-2013).

European
- TU Delft is member of **Conference of European Schools for Advanced Engineering Education and Research** (CESAER). Currently Karel Luyben, Rector Magnificus of TU Delft, is the president of CESAER.
- TU Delft is member of the **IDEA League**. The IDEA League is a network of four leading universities of technology and science: ETH Zurich, RTWE Aachen, TU Delft, Chalmers University.

National/Regional
- TU Delft is participating in the **SURF Special Interest Group (SIG) Open Education**. SURF is the cooperation of all Dutch universities in the field of ICT and Education. The SIG facilitates the community of people involved in open education. Martijn Ouwehand is member of the coordinating core team.
- TU Delft is cooperation with Leiden University and Erasmus University Rotterdam in the joint multidisciplinary **Centre of Education and Learning** (CEL). It aims to develop knowledge that contributes to the ongoing improvement of university teaching and learning.
- TU Delft is participating in the Centre for Engineering Education, a joint research initiative by TU Delft, University of Twente and Technical University Eindhoven.

Certification and accreditation of MOOCs

From the beginning of the MOOC movement there has been a strong quest for certification of MOOCs in Europe. The TU Delft thinks that it is too early to start such a formalisation of this new development. Institutions need time to experiment without new rules and regulations of governments.

It is already possible for universities to formally recognise the certificates of MOOC. Most universities have processes in place via de exam committee's of the regular degree programs to assess prior acquired knowledge and skills.

We noticed the biggest challenge for exam committees when assessing MOOC certificates is the lack of information to be able to assess the request. We propose to add a supplement to an ID-validated certificate with information about the course and university, such as course level, workload, instructors, assessment method, learning objectives and activities, and ID verification. This would help the exam committees to assess the accomplishments of the student in a specific MOOC.

Recommendation for the European Commission

We have two recommendations for the European Commission:

1.   Don't try to regulate the MOOC development

The MOOC development is still in an infant stage. Every university is currently looking at what it will mean for them and what consequences it will have. At this moment it is too early to regulate the MOOC world. This is all about innovation! Governments should be de-regulating the education world, so there is more space for innovation and step into the open and online world.

2.   Think global, act local

Education is becoming a globalized market. Focusing too much on the European situation will mean that you loose the connection with the rest of the world. So be aware of the global developments and help universities to position themselves in it. So think global, but act local!

The authors

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Willem is manager Production & Delivery of TU Delft Open and Online Education. This includes OpenCourseWare, MOOCs, Online and Blende Courses. He is also board member of the Open Education Consortium.

Timo Kos
Timo is the Director of Education of TU Delft. He is responsible for all educational policy of the university, teacher and student services, including the open and online education. In the past he was president of the Dutch branch of the Khan Academy.

Martijn Ouwehand
Martijn Ouwehand is currently an e-learning developer for the TU Delft Extension School. In the past he was part of the TU Delft Open Education Team. He is member of the core team of the SURF SIG Open Education.