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## The Interdisciplinarity of Online Courses in Academia

**Abstract:** Nowadays, when the fast pace of life presses everyone to do more things in a shorter time, there is little time left for self-improvement and for learning. Paradoxically, now there are more opportunities than ever before to discover new things. The plethora of information available is overwhelming. The advent of internet brought with it increased prospects of learning and acquiring new skills. Practically speaking, the internet can teach us almost everything. In this context, famous universities and institutes have developed their own online courses, offering unparalleled chances to learners all around the globe: valuable information presented by reputed professors and specialists, for modest fees or even for free. Never before has this happened in the history of human knowledge. This article aims at discussing the large offer of such online courses and their impact on the academic world.

**Keywords:** online courses, MOOC, university, internet, learning.

Academia is going through important modifications as times change and one of the main changes that can be witnessed is an openness toward technology, innovation and the world wide web. We are witnessing the advent and impressive growth of online, open courses available to all learners at low cost or no cost at all. Educational opportunities are wider than ever and good quality is now available for everyone on the internet. Regarding this, old and prestigious universities are now offering online courses or include such courses in their bachelors' or master' s programs. The potential for online learning is immense and higher institutions have already acknowledged it. There are obvious benefits associated to online learning and some downsides, as well. This article will aim at underlining several of these and to raise open questions regarding the future of education in the technological age.

Online courses emerged as early as 2008, when the first MOOCs were created – MOOC standing for “Massive open online course”. A MOOC is an online course with the option of free and open registration, a publicly-shared curriculum, and open-ended outcomes. MOOCs integrate social networking, accessible online resources, and are facilitated by leading practitioners in the field of study. Most significantly, MOOCs build on the

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engagement of learners who self-organize their participation according to learning goals, prior knowledge and skills, and common interests (Comier 2010, 5).

Historically speaking, it all started in 2008, when a course entitled “Connectivism and Connective Knowledge” was made available by Siemens and Downes from the University of Manitoba. It aimed at allowing as many learners as possible to enjoy the benefits of an online course. It was the first course to include open learning with distributed content, meaning it was located on the world wide web. Participants in the course could add to the network and an aggregation tool was employed to gather all content together. Although there were people attending the courses on campus in Canada, where it originated, there were also thousands of students taking part online. David Comier coined the term MOOC, in response to the above mentioned course. The initial MOOCs had a clear social component which was lost later on, as more and more courses appeared. However, the Canadian experiment was, in fact, not the first large scale, successful experience with such courses. Stanford University had previously offered three online free courses seven years earlier, in 2001, when Norbig and Thrun provided hundreds of thousands of students with an insight into artificial intelligence. The same year, 2001, the Massachusetts Institute of Technology (MIT) created OpenCourseWare (OCW) – university courses made available for free on the internet, which later developed into MITx and edX. The latter are online platforms that provide online university courses on various topics at low costs or no costs at all, some even offering academic credentials after certain exams.

The idea of such courses is to publish all course materials online and make them widely available to everyone (Yue n.d.). McGill University from Canada mentions on its official web-page the existence of online consortiums with over 30 partner universities, all prestigious ones, making available an open source platform to be used by everyone. (McGill n.d.) Widely popular platforms offering online courses on almost any type of subject are edX, MITx, Coursera, MiriadaX, Udacity, Udemy, FutureLearn, but there are tens of other platforms to choose from. Class Central, a learners’ supported initiative of keeping watch on MOOCs around the world, claimed in 2019 that by the end of 2018, 100 million people had signed up for at least an online course; furthermore, apart from large global platforms, national sites around the world are launching such online courses in their own language, such as India, Israel, Italy or even Thailand. Class Central catalogued over 12.000 such platforms offering courses worldwide (Shah and Pickard 2019).

A short overview of courses available on such a platform reveals an overwhelming interdisciplinary offer: from architecture, arts and culture to computer science or data analysis, not forgetting economics and finance,

education, philosophy or even earth science. edX, for example, which comprises virtually any type of course imaginable, is also offering certifications, from professional certificates to online masters' degrees at affordable prices. Another example is the British platform FutureLearn, providing not less than 13 categories of courses, ranging from Creative Arts and Media to Law or Science, Engineering and Math. Each of these categories comprise tens of courses to choose from. The programs offered by FutureLearn range from short courses that teach new skills to in-depth programs that provide professional or academic accreditation to flexible online degrees. Coursera, on the other hand, offers 100% online Masters's Degree, Msc, Bachelor's Degree from universities as prestigious as the University of London or Penn University, USA. There are also certificates available for online learning – for example, in 2019, only John Hopkins university is offering 10 specialization courses in Data Science with 14 available subtitles in various languages including complex ones like Vietnamese or Japanese, but the proposals are many more. In fact, it seems this education breakthrough presents the major disadvantage of being so varied, that choosing becomes very difficult indeed.

Berkley's renowned historian DeLong argues in his revolutionary posting of 2010 that there are four online learning revolutions (DeLong 2010). The first one took place as early as 390 BC, when the books replaced the teacher, allowing the access to knowledge of many more learners than those who could hear the teacher in person. Plato thought this was a second-rate experience: reading a book of the teachings of a first-rate intellectual. The second revolution had to do with the advent of universities in the western world. Books being extremely expensive back in those times, the university experience of learners being able to absorb the content of more books as read and explained to them by a scholar was a superior experience, considering how few books could be owned by one. The third online learning revolution was the invention of the Gutenberg press, which brought about the explosion of print and made books available, in time, to virtually everyone. The fourth revolution is obviously the advent of online courses we are witnessing today and DeLong expresses his concern regarding the future of this online learning and of universities as providers of education in an era of technological progress (DeLong 2010).

Dr. Barbara Oakley, on the other hand, extensively discusses in her book entitled "Mindshift" how learning online can be beneficial for the brain, as it offers a non-formal learning style. The incredible offer of online courses makes specializing in one area only obsolete. Oakley discusses the broadening of passions and drawing on recent neuroscientific research, she mentions the notions of aptitude and ability versus change. Barbara Oakley challenges the carefree set careers by proving that learning is a continuous process, that professional expansion in several directions is required, and

the brain needs daily training. Furthermore, people who change careers or interests later in life due to such online courses are “fertile cross-pollinators”, bringing significant insights from one discipline to another, challenging preconceptions and tapping into the hidden potential of human beings (Oakley 2017).

As Sanchez-Gordon and Lujan-Mora mention, the MOOC inventors promised in the beginning the democratization of high quality education by making it available to people worldwide, especially those who would have not been able to access it otherwise (Sanchez-Gordon and Lujan-Mora 2019). The founders of Coursera are quoted stating that their platform aims at offering ‘the best courses from the best instructors at the best universities and provide it to everyone around the world for free’ for people with great potential and little exposure to high-quality education (Koller 2012). The Icef Monitor noted in 2013 that MOOCs promised in 2011:

to open up education to millions across the world who, for either geographical or financial reasons, would never have been able to access it otherwise; to be incredibly disruptive – for professors, bricks-and-mortar campuses, and revenue streams; to be very limited in scope, with no clear business or monetisation plan behind them, no credits attached to courses or degrees, and no sense of how a free, non-credited achievement would stack up in the real world of work. (Monitor Icef 2013)

William Leonard makes an inventory of early promises from learning platforms:

A few elite institutions would offer the best of their courses, taught by top instructors at little or no charge. [...] MOOCs would employ a low-cost business plan, allowing broad student access to free or low-cost high-quality education, countering the impact of ever-increasing tuition fees. On-demand delivery would accommodate conflicting family and work responsibilities. Traditional student age and returning adult students would have equal access. [...] Institutions would benefit from online offerings requiring little, if any, new brick and mortar projects to accommodate the flood of additional students. The technology would promote more efficient use of existing faculty resources. (Leonard 2019)

Indeed, there are many advantages of online courses. Some are obvious: the choice is extremely wide and everyone can now learn anything – education is openly accessible to everyone, of all ages and backgrounds. The only requirement is the desire for knowledge. Never in the history of human kind has such a privilege been so widely available. As the OCW platform advertises, there is no registration, no enrolment, no start or end dates, just information freely available for everyone (OCW n.d.). With online learning, there is the obvious advantage of time: such courses are extremely flexible and students can organize their own learning according to their needs and

time available. Also, learners study at their own pace, as fast or slow as they can – this is a very important asset of online courses. The costs are also a major advantage, as online courses are obviously more affordable – a person can obtain a master’s degree from a prestigious university, a degree which would otherwise be off-reach. The quality of courses and the teaching input of renowned professors and instructors is also worth mentioning. The broadening educational opportunities are also seen as a remedy for the rising inequality in the world (Thoma 2013). Also, there is a certain amount of experimentation with learning platforms, such as blended courses, including both face-to-face teaching and online activities, or online courses as complementing traditional teaching methods in the form of conferences or films to be watched on youtube, material to be read available on google drive, listening of online podcasts, or courses 100% available on the platform but with more teaching input in real life.

However, there are also certain disadvantages associated to online learning. First of all, it may seem a bit impersonal, often implying no human contact. In the case of courses that also offer support forums, this aspect is eased but still present. Also, too much flexibility may mean less commitment from the learner. Next, not all learners interested in the courses offered online have the time or the means to actually do them. Mark Thoma lists several negative aspects related to online learning: students cannot ask questions to their teachers and the contact with instructors and peers is minimum, if not absent altogether – no pair work, no group work, no common projects, no office hours to discuss with the teachers. Also, evaluations may be deficient and lacking in substance since they must often be machine assisted. Last but not least, the development of online courses might bring the disappearance of traditional universities as such (Thoma 2015). Furthermore, statistics show that drop-out rates are extremely high. Inside Higher Ed shows that by 2017-2018, the course completion rate was extremely low: only 3.13% actually completed the course. MOOCs’ low completion rate has barely budged despite 6 years of investment in course development and learning research, argues a *Science* report (Reich and Valiente 2019). And last but not least, the MOOCs seem to fail their early promises, as the vast majority of learners starting a course were educated people from economically advantaged countries – so the initial purpose of reaching developing countries was not fulfilled (Leonard 2019). The *Science* magazine notes that MOOC participation is concentrated almost entirely in the wealthiest countries of the world:

The vast majority of MOOC learners never return after their first year, the growth in MOOC participation has been concentrated almost entirely in the world’s most affluent countries, and the bane of MOOCs – low completion rates has not improved over 6 years [...] It was clear from the first few years of

MOOC research that MOOCs disproportionately drew their learners from affluent countries and neighborhoods, and markers of socioeconomic status were correlated with greater persistence and certification. (Reich and Valiente 2019)

The evolution of learning platforms was rapid, two main types of MOOCs emerging in a short period of time: C-MOOCs, designed to connect learners more, X-MOOCs, related to the OpenCourseWare from the Massachusetts Institute of Technology and being offered in partnership with a profit organization. However, these days there are other branches growing from the original stem of MOOC. To mention just a few: SMOOC stands for Synchronous Massive Online Course and it provides live lectures to students who need to register and participate in a more personal and interactive manner, including through chat-rooms for asking questions or posting comments; SPOC, on the other hand, stands for Self-Paced Online Course as it represents a course open to enrollment all the time which means higher independence and an extremely flexible pace, but virtually no interaction to the other participants in the course or to the teacher; SPOC may also stand for Small Private Online Courses which restrict the participation of students to some hundreds only, ensuring a better teaching quality and a more personalized learning experience.

Authors like Veletsianos and Sheperdson have looked into the interdisciplinarity of MOOCs and published their findings which used bibliometric data as a result of descriptive and inferential statistics. Their conclusions were that Education and Computer Sciences were the most two frequent researchers of the MOOC phenomenon, with over half of affiliations, the rest being rather diverse, as well. Furthermore, they found that MOOC is becoming more and more interdisciplinary in time “suggesting that the scientific complexity of the field is being tackled by a greater diversity of researchers [...] empirical research on xMOOCs may be more interdisciplinary than research on cMOOCs” (Veletsianos and Sheperdson 2015, 11).

The interdisciplinary character of online platform will obviously change in the future, as xMOOCs represent a more familiar model for academia and the MOOCs in general are growing in popularity. However, the change might be for the best, as more fields might become interested considering the probable growth in popularity of online learning. Adam states that MOOCs, if designed inclusively, have the potential and ability to create reciprocal channels between truly diverse global participants, where a plurality of voices can be heard and true diversity of global knowledge can be achieved. This would require taking into account the context of the marginalized virtual participant (Adam 2018). Also, with an increased focus on revenue and profit from the organizing institutions, the situation itself of

online courses will most likely experience significant modifications, as well. For example, online education may improve the incomes of learners by offering them more opportunities to earn money based on what they have learned. Also, the learners' quality of life might be improved due to their participation in the courses. This could increase their popularity as well, a fact which may lead to other changes, like less free courses and more paid ones.

The MOOC courses will gradually come to reflect the technological realities of nowadays. The MOOC's future will depend on improved instructor preparation and pre-registration screening, coupled with a business plan designed to at least break even (Leonard 2019).

Online platform providers will most likely search for and even find solutions to the problems they are facing, such as the high drop-out rate. This will lead to changes in the format of MOOCs and the external aspects regarding their availability, price, offer of certification and so on. Also, online courses will continue to adapt to the realities of today and perhaps include more topics that reflect what is currently happening in the world. Regarding the controversial relationship between online courses and degrees and universities, Thoma express his worries that

the development of online courses will lead to a two-tiered education system, but that's just another way of saying I think traditional "brick and mortar" education is better. Traditional higher education institutions can do everything online courses do [...] and provide things such as hands on labs in the sciences, highly valuable internship opportunities, and the chance to participate in cutting edge research. (Thoma 2015)

So, in conclusion, traditional universities will probably continue to exist and so will online courses – the main concern of research will be to harmoniously blend the two for the best possible outcome.

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