Massive Open Online Classes (MOOCs) are Not Dead: An Overview of Geographic and Degree Trends in MOOCs

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Abstract
In 2012, the New York Times proclaimed it was the year of the MOOC. By 2015, most academics in higher education in the United States and Europe were saying MOOCs are dead. During this presentation, I will present an overview of MOOCs from 2012 through 2019. I will walk through different product developments with a variety of MOOC platforms from free open educational resources (OER) courses to full online degree programs from elite universities. I will also walk through data illustrating which are the primary MOOC providers and geographic trends for what different regions are doing with MOOCs. This includes degrees in North America, partnerships across institutions for content in Latin America, credentialed courses that can be used for credit in any European institution and popularity of MOOCs in Asia. Participants will walk away from this session with a thorough understand of trends, products, and history of MOOCs globally from 2012 to the present.

Keywords: Massive Open Online Courses, MOOCs, Online Enrollment, Open Educational Resources, Online Degree Programs, Online Certificate Programs, Upskilling, Professional Development

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Introduction

Massive open online courses (MOOCs) were hailed in 2012 as a disruption (Christensen, Horn, & Johnson, 2008) to higher education that would lead to greater access to high quality educational content for the world. Proponents of MOOCs looked at MOOCs to address the escalating costs of education, the lack of required infrastructure in development nations, and the inequity of access to higher education. Then president of Stanford, John Hennessy, proclaimed that MOOCs were a tsunami about to disrupt education (Hennessy, 2012). MOOCs were seen as the disruption utilizing technology that would transform education (Lucas, 2013). In 2013, industry news proclaimed that MOOCs were dead (Borden, 2014). Faculty and university administrators that had not been early adopters creating accounts on MOOC platforms, quickly eschewed MOOCs and determined that based on low completion rates and the emerging research showing most MOOC takers were already college educated that MOOCs were a failure (Hansen and Reich, 2015). Yet, in 2019 there are dozens of MOOC platforms and an estimated 380 million learners across 30,000 courses with over 50 MOOC based degree programs. MOOCs are most definitely not dead.

This paper will look chronologically at the emergence of MOOCs, the development of different platforms based on region and domain, the results of monetization strategies, and geographic trends in MOOC adoption.

Discussion

Although MOOCs were in the media broadly starting in 2012, the original MOOCs began in 2008. Two MOOCs started around this time, Introduction to Openness in Education, with Stephen Downes and George Siemens and Digital Storytelling, DS106, with Jim Groom. These original MOOCs were open courses that focused on student participation in adding course content into the MOOC. This type of constructive input with students augmenting the course content ended up being termed connectivism (Downes, 2008). While there was some excitement in the open community about these courses, they did not enter the mainstream media to the extent of the 2012 providers. Other open content that preceded 2012 include content from Massachusetts Institute of Technology (MIT) Open CourseWare and Carnegie Mellon's Open Learning Initiative. Many other universities, such as Stanford, had been utilizing the iTunes platform to freely distribute to a global audience course content, typically recorded lectures from the back of a classroom.

In 2012, the main MOOC platform providers emerged, many of which were led by faculty at Stanford University's computer science department. Andrew Ng and Daphne Koller founded Coursera. Coursera partnered with universities to publish their university partner content. Sebastian Thrun partnered with Peter Norvig (Google) and created Udemy. Udemy partnered with faculty and focused on mostly science, technology, engineering and math (STEM) courses. Finally, Amin Saberi and Farnaz Ronaghi from Stanford founded NovoEd, a MOOC platform built around team-based projects. Outside of Stanford, edX was a major initiative with MIT and Harvard with tens of millions of dollars and staff investment. From the beginning, some of the platforms were funded by private companies while edX remained a public endeavor. Another start-up open content provider, Khan Academy, focused on K-12 math education.

Most of the discussion in 2012-2013 was about the broad reach of these new MOOCs and how the original MOOCs differed from the emerging new MOOCs on platforms like Coursera and edX. One of the popular figures from this time cited the enrollment of the Artificial Intelligence (AI) course taught by Sebastian Thrun and Peter Norvig. In this class, more than 160,000 learners signed up, it was said that this AI course may change the world (Leckart, 2012). Typical enrollment for similar classes on campus might have up to 100 students. In an instant, the MOOC was able to reach more students than could be taught by these instructors in 80 years assuming the class was offered once a semester for two semesters an academic year.

The original MOOCs were known as connectivist (Siemens, 2005) with those emerging later being referred to as behaviorist or xMOOCs. Connectivist MOOCs had learners that participated in the class create content for the class. Behaviorist or xMOOCs were said to be more edutainment where they consisted mostly of recorded lectures but had minimal student participation components: quizzes, peer-reviewed assignments, discussion boards, and on one platform team-based projects.

In 2013, we saw the emergence of additional platforms, more university partnerships, and more content. The most well-known emerging platform in 2013 was FutureLearn. FutureLearn is a European open content platform. Coursera grew in this time adding additional partners to their portfolio of content providers. Every institution that was in the MOOC space was working to understand what types of content would appeal to what types of learners. Most institutions started by mimicking the residential classroom and offering MOOCs up to 15 weeks in length. As data started coming in on completion rates, institutions quickly scaled down content duration and switched to a mode of offering shorter form content in 4-6 weeks with 1-5 hours of content per week. Institutions could also leverage best practices around how MOOCs could be utilized for career moves and how to reach learners that were most in need of the skills (Kolowich, 2014).

In 2013-2014, the big focus was on research to understand who was taking MOOCs (Christensen, Steinmetz, Alcorn, Bennett, Woods, & Emanuel, 2013) and the impact to those learners (Koller, 2012). With educational partners looking to understand MOOCs, research was a top priority. All those learners provided big data to understand what was actually happening within online courses. Researchers looked at understanding who was enrolling, engaging, disengaging and completing (Kizilcec, Piech, & Schneider, 2013). Buckets describing types of learners emerged: no-shows, observers, drop-ins, passive participants, and active participants (Hill, 2013). Data on patterns of engagement (Macleod, Haywood, Woodgate, & Alkhatnai, 2015) with the content were widespread along with understanding the delta between expectations and reality (Hollands and Tirthali, 2014). Many researchers referenced back to if MOOCs were serving the educationally underserved (Schmid, Manturuk, Simpkins, Goldwasser, & Whitfield, 2015). My own research in this area demonstrated that residential college students taking MOOCs as part of their for-credit classes did not watch all the videos, did not participate in online discussion forums on the platform, but highly valued the flexibility, ease of access, and ability to master the content through taking quizzes multiple times (Palmer, 2015).

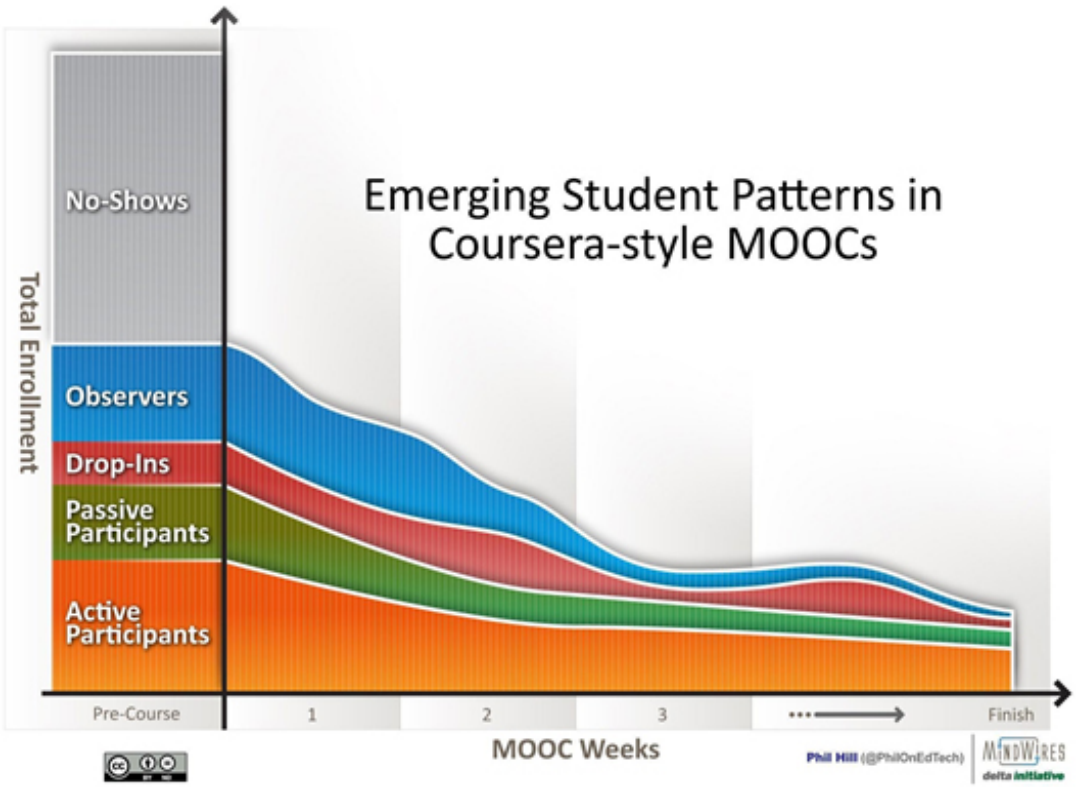

Figure 1: A chart of the Emerging Student Patterns in Coursera-style MOOCs (Hill, 2013).

The University of Pennsylvania, University of Washington, and Coursera did a joint research project to understand the learner outcomes on Coursera (Koller, Eriksson, & Zhenghao, 2015). This data grouped learners into two categories: education seekers and career builders. The published results stated that 87% of the career builders reported benefits: 3% received promotions, 3% received a raise, 62% were better equipped for current job, 43% improved candidacy for a new job, 26% found a new job, and 9% started a new business. Of the education seekers, 88% reported benefits: 64% gained knowledge essential to a field of study, 38% decided on a field of study, 38% refreshed concepts before going back to school, 18% received credits or waived prerequisites for an academic program, and 17% improved college admissions.

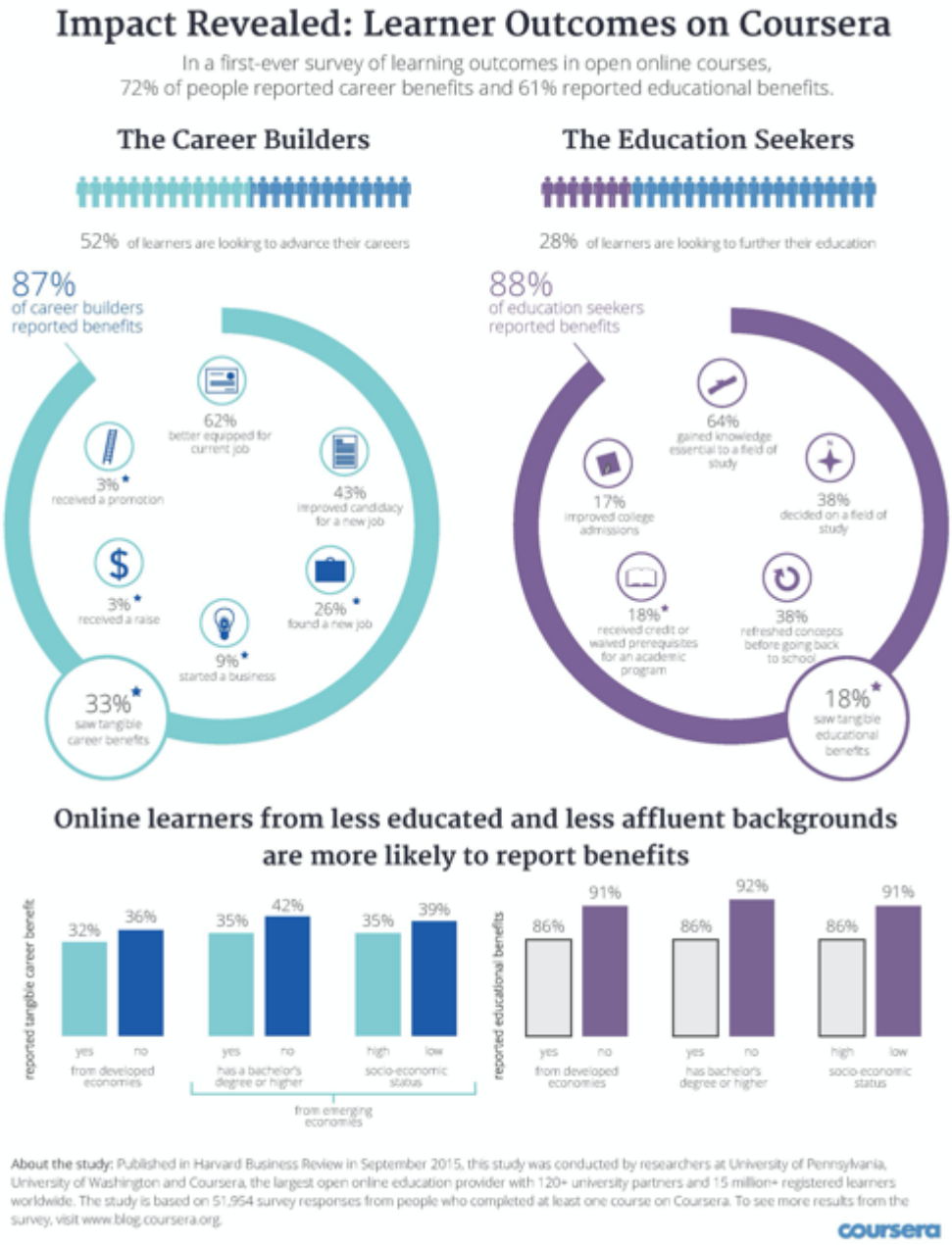

Figure 2: An infographic summarizing the Impact Revealed: Learner Outcomes on Coursera study (Koller, Eriksson, & Zhenghao, 2015).

In 2014, there was also much mapping of content providers and related partnerships. Researchers were mapping the emergence of MOOCs alongside online distance learning and open education, projecting the future of MOOCs into corporate training and tools to evaluate competency-based education.

Other researchers were arguing the model of open content for MOOCs and illustrating who founded the platforms. There was strong pressure for platforms that were financed with private equity, venture capital (VCs) firms, to have a sustainable

business strategy. For the private firms such as Coursera, the pressure was on to make money. This was fundamentally at odds with the concept of open content.

To address this growing pressure from funders, different platforms began introducing new products. In 2012, we had individual MOOCs. In 2013 we had series of related MOOCs that were clustered into a specialization. In 2014, monetization was introduced for MOOCs and specializations. In these monetized product offerings, a fee was charged for taking exams and getting certified statements of accomplishment for successful completion of the course work. For Coursera, they introduced monetization in their Signature Track product. Let's dive into the second quarter (Q2) through fourth quarter (Q4) revenues in 2014 of the Johns Hopkins Data Science Specialization hosted on Coursera shown in Figure 3. For Q2-Q4, the specialization had 12,486 average monthly learners enrolled in the Signature Track (=monetized) version of the specialization. Revenues from these learners during this time was $1.75 million dollars with 85% of learners in the Signature Track version of the course successfully completing all the course work compared to 10% of learners completing all the course work in the non-monetized version of the specialization (Shah, 2019).

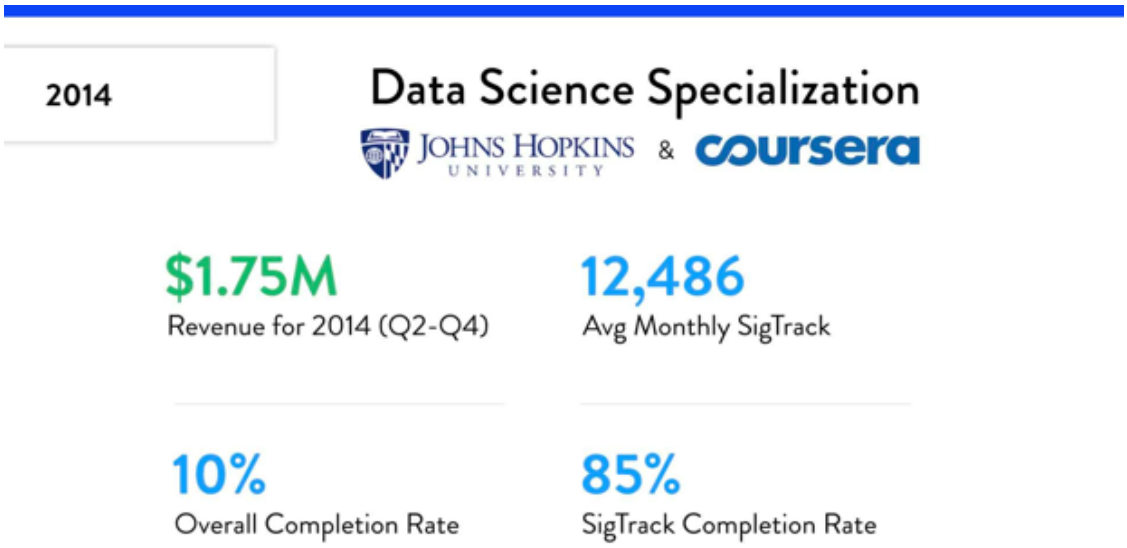

Figure 3: A slide image summarizing Q2-Q4 revenue from the Johns Hopkins Data Science Specialization hosted on Coursera (Shah, 2019).

This initial financial success of the Signature Track, monetized, course series lead to rapid productization on the platform. Soon after the release of Signature Track certificates, platforms started experimenting with selling to corporate training clients. Platform providers mapped out a series of products and price points: free, certificates (free and monetized), micro-credentials, for-credit, online degrees, and corporate training (Shah, 2018). Creating this portfolio strategy on the platforms provided a range of solutions for learners. Learners could take one course for free, if interested decided to buy a series of courses, and then apply to a university partner that would take the already completed MOOCs and provide credit at the institution.

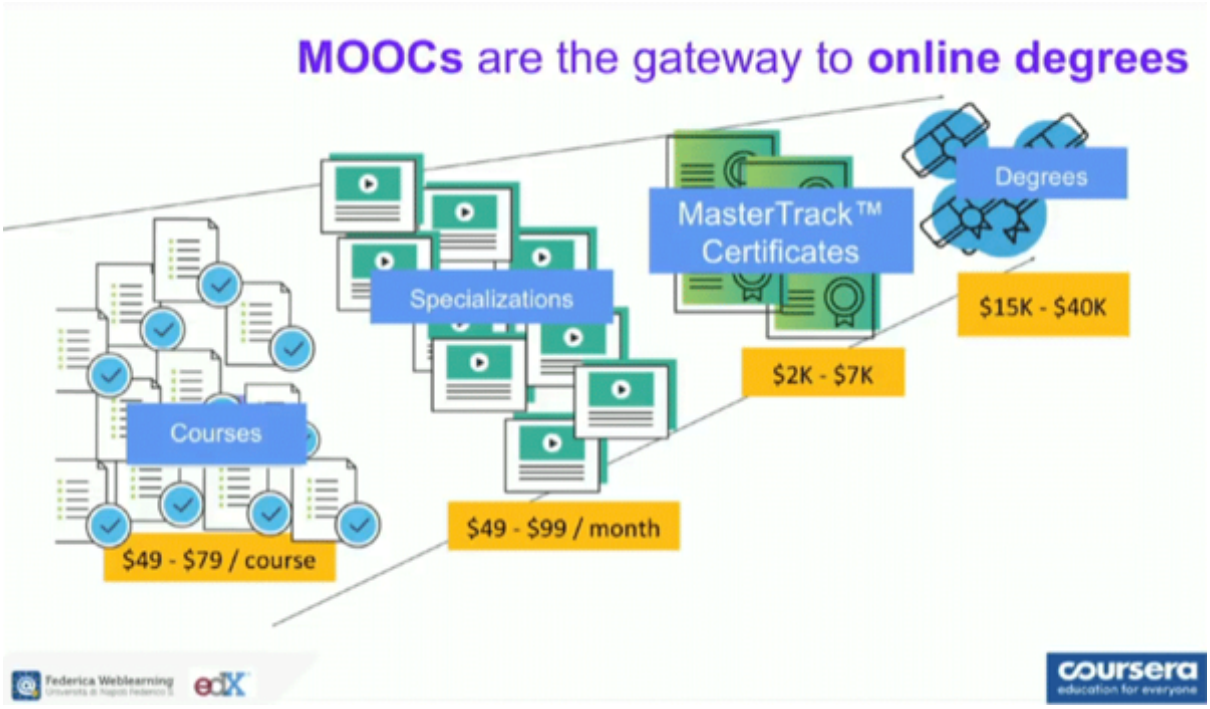

Figure 4: An infographic showing the different products and price points in Coursera.

This led to the first fully online degree programs (Figure 4). The earliest of these was the Online Master of Science in Computer Science (OMSCS) from Georgia Tech. This OMSCS degree quickly grew in scale, partially because of the platforms ability to reach a global audience and provide a robust technical infrastructure. The OMSCS was originally hosted on Udacity and created in partnership with a $3 million-dollar grant from AT&T. As of spring 2019 according to the Georgia Tech website, the OMSCS has had 26,000 applications, a total enrollment of 8,664, with students from 114 different countries (Figure 5).

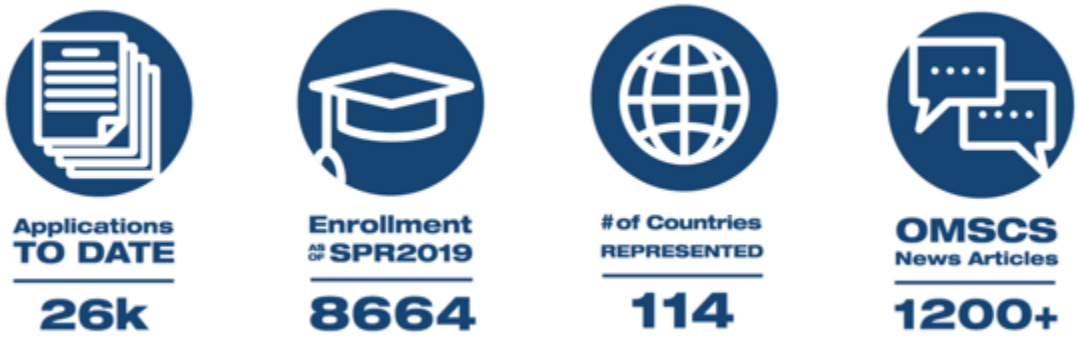

Figure 5: Enrollment data from the Georgia Tech Online Master of Science in Computer Science (OMSCS) degree program.

Figure 6 is a chart from Class Central mapping out the 'Product at Every Price' (Shah, 2019). In this figure, one can see the range from free courses to fully online degrees. These courses range from free to $30,000 for the degree. This chart also shows the cost for corporate training which became very popular in 2015-2016 as more corporate clients agreed to use Coursera as a central learning platform for their employee training.

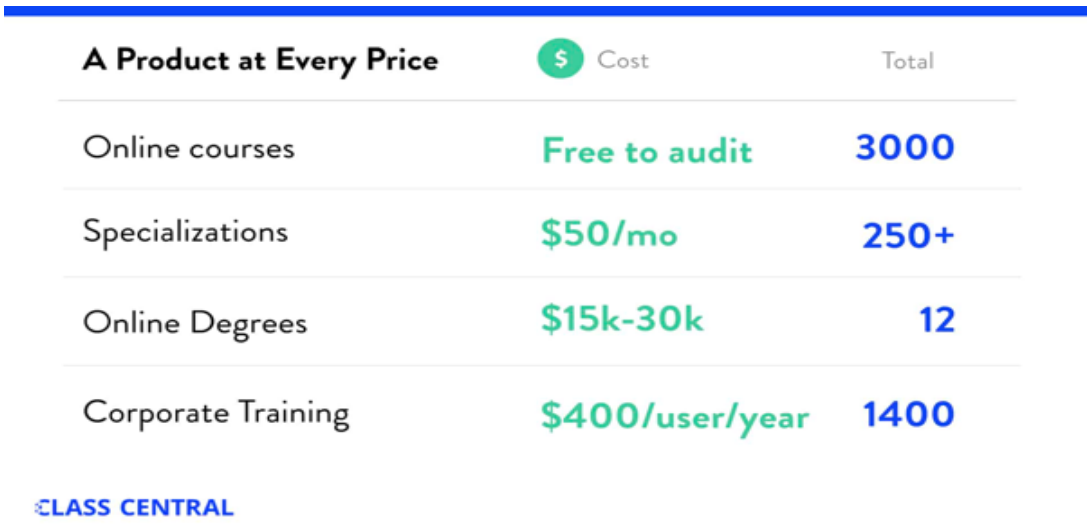

Figure 6: Chart from Class Central mapping out "A Product at Every Price" (Shah, 2019).

In 2015, many other MOOC platforms were becoming established. Some platforms specialized in specific domains or subject areas. Examples of domain specific examples include Kadenze which focuses on math content. Udacity focuses on science and technology content. Other platforms were localized in specific regions. Examples of these platforms include FutureLearn in Europe and XuetangX became the main MOOC provider in China (Shah and Pickard, 2019).

In 2016, Coursera launched a new program, Coursera for Refugees. This effort demonstrated that Coursera was intent on providing open content to align with their mission, "We envision a world where anyone, anywhere can transform their life by accessing the world's best learning experience" (Coursera, 2012). This program has served over 11,000 refugees with 8,500 course completions (Figure 7).

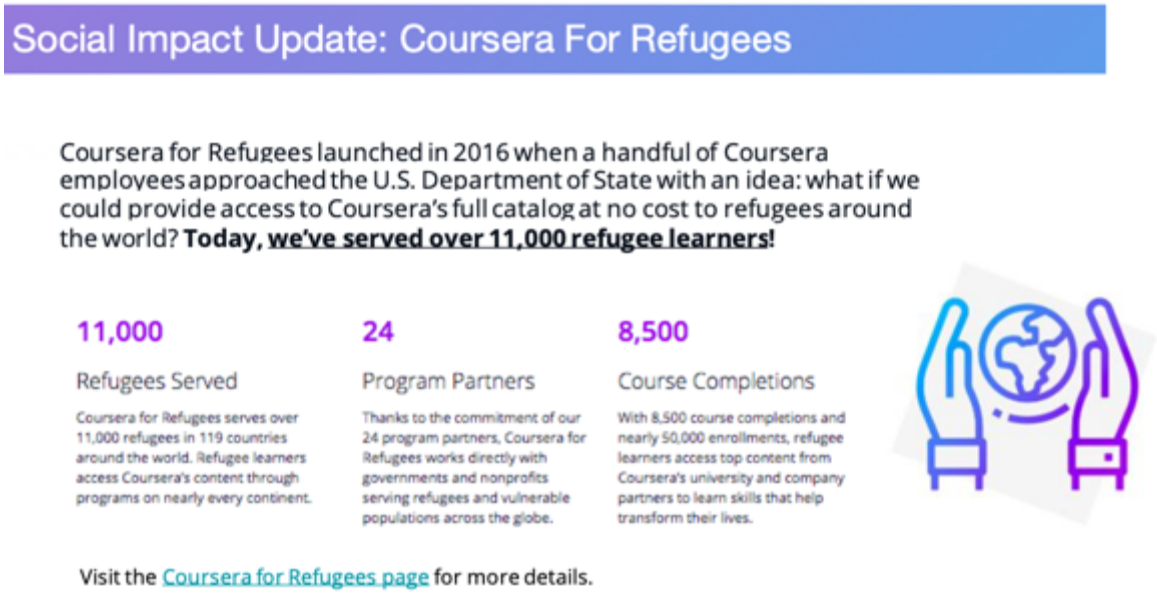

Figure 7: Graphic on Social Impact Update: Coursera for Refugees.

In 2016, there was a regional MOOC explosion. Governments in India and China decided to utilize MOOCs to educate their citizens. This may be due to a lack of physical infrastructure in each of those countries. Without enough schools or teachers, the governments Figure 8 illustrates all the MOOC providers that are now active providing content in Chinese. With government sponsorship and the technical infrastructure provided by the MOOC platforms, more localized content can be delivered to specific regions.

Figure 8: Graphic from Class Central on Chinese Language MOOC Platforms (Ma, 2019).

In 2016, according to Class Central there were over 58 million registered users and 6,850 courses (Shah, 2016). Figure 9 shows a list of the top five MOOC providers. MOOCs were definitely not dead with more learners on ore platforms taking more courses in countries around the world.

World's Top-5 MOOCs Providers

MOOCs provider	Country of origin	Year of launch	Number of registered users	Number of courses
Coursera	USA	2012	23 million	2329
edX	USA	2012	10 million	1319
XuetangX	China	2013	6 million	380
FutureLearn	UK	2012	5.3 million	485
Udacity	USA	2012	4 million	172

Source: Class Central, Dec 2016 Prepared by: nalanda2.org

Figure 9: Class Central chart of World's Top-5 MOOC Providers, 2016.

In 2017, Coursera added Coursera for Partners as a product offering. By this point, the Coursera platform options included: Coursera (direct sales to learners), Coursera for Enterprise (corporate training sales), Coursera for Refugees, Coursera for Government, and Coursera for Partners. Coursera for Partners had the first university partner, Duke, provided Duke students with access to all of the Duke created Coursera content for free. One of the biggest announcements with Coursera for Partners was when three top universities in Latin America started collaborating to provide free access to over 100 courses from these three universities.

In 2019, Coursera launched Coursera for Campus. This product was first announced in India. This product sells the Coursera for Campus platform to institutions that want to offer to their students courses that are hosted on Coursera. Institutions pay the same $400/student fee that corporate training customers pay to offer their students courses from elite brands hosted on Coursera (Shah, 2019).

Conclusion

MOOCs have reached millions of learners around the world. According to data reported by Class Central, there are over 380 million learners with dozens of MOOC providers, and over 13,500 courses, 820 micro-credentials, and 50 MOOC-based degrees (Shah, 2019). Despite low completion rates, research has found that the majority of learners that complete MOOCs have indicated positive impact on their careers or education. Governments that lack the necessary infrastructure and time to train teachers have leveraged regional MOOC platforms to scale education reaching millions of students. MOOC platforms continue evolving with new products and revenue streams announced each year. Content hosted on these platforms ranges in domain with an increased focus on stackable content that can lead to certifications or pathways into degree programs. MOOCs are most definitely not dead.

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