

Chapter 2

Emergence and Development of MOOCs

Abstract The e-learning has until quite recently been marked by considerable attention paid to MOOCs. One of the disruptive innovations introduced by MOOCs is the open access to the process of teaching and learning. The impact of MOOCs does not necessarily focus on teaching and learning, but is rather adopted in different manners to serve the needs of public and private sectors. A major development of MOOCs is taking place into a layer of higher education institutions, companies, and associations with bulk of sufficient funding for research and practice. Under MoE's policy, a rapid development of MOOCs and the expansion of MOOC-related practices are underway. Variety of pedagogical reform in the field of MOOCs is undergoing experimentally or practically alongside the rapid growth of MOOCs in China. Even though the common issues are faced such as intellectual property right, business mode, quality assurance, credit certification, participation rate, and constant dropout rate, the outlook for MOOCs is promising as the Chinese government released policies in accelerating MOOCs development.

2.1 MOOCs and Their Evolution

The rapid growth of MOOCs can be seen in two aspects. The first is the fast increase of both MOOC platforms and available courses, their quick spread to every part of the world, and large numbers of learners attracted to the courses; the second is that MOOCs have also evolved into various forms. The reason for the colorful forms of MOOCs can somewhat be attributed to the development stage (preliminary stage) they are in, but the more fundamental cause should be the great innovative potential of technological development as well as the many possibilities of educational organization/service models.

2.1.1 Definition of MOOCs

“MOOCs” is an acronym for “Massive Open Online Courses,” which in China is transliterated into “慕课”. MOOCs are closely related to, yet fundamentally different from, the open course resources movement that has existed for years. OpenCourseWare (MIT-OCW) was initiated by the Massachusetts Institute of Technology (MIT) in 2001 and later gained influence all over the world. By 2011, MIT had uploaded the teaching materials of almost all of its 2000 courses on the Internet, from which over 100 million users benefited. MIT plans to have page views of OCW Web site increased by 10 times by 2021 to reach 1 billion minds, hoping that open course resources could “bridge the global gap between human potential and opportunity, so that motivated people everywhere can improve their lives and change the world” (OCW 2011). Currently, MIT has published materials from 2260 courses on its OCW Web site, which have attracted 175 million visits. These courses fall into three categories: the lecture notes, assignments, and experiments; part of videos of the lectures and experiments; and themed materials of different disciplines.

Most of open course resources provide nothing more than published courses. They do not offer tutoring, do not promise to provide all the materials of a course, and do not grant certificate or degrees (Li 2012). As commented by Dick K.P. Yue, Professor at MIT, “The idea is simple: to publish all of our course materials online and make them widely available to everyone.” Therefore, in the efforts to share quality courses with the public, open course resources focus on the width the resources are able to reach, instead of the depth of the influence on education. MIT-OCW is not the formal education in MIT, it cannot replace the dynamic classroom interactions, and it is not a degree-granting initiative. It is a Web-based publication of virtually all MIT course content, open and available to the world, and is a permanent activity (OCW 2011).

MOOCs are Web-based open learning (Tang 2015). Compared with OCW, MOOCs not only provide free open course resources, but have further opened up the entire learning procedure. Instead of only uploading lecture videos, MOOCs have better support for the learning process and show more concern on the actual learning effects achieved by learners. Through learning support services such as chapter quizzes, course examinations, and teacher–student interaction, MOOCs try to encourage large-scale online learning. This is obviously a big step forward compared with the open course resources movement that only posts course content and cares nothing about the learning process and learning results of the learners. Emergence of MOOCs represents a turning point. Before MOOCs, the focus of online education was on the content of the published courses; afterward, with the exploration of MOOCs into a brand-new organizational mode for university curriculums in the context of the open Internet, the deep-rooted organization and management modes of traditional classrooms are seriously challenged (Wang 2013). Apparently, MOOCs offer not only course resources, but also services facilitating the learning process of learners and appraisals of their learning results.

Or in other words, while open course resources exhibit the content of the courses on the basis of the Web 1.0 technologies, MOOCs, relying on Web 2.0 technologies, are able to fully reorganize the knowledge innovatively via the comments and sharing of the users, so that more profound knowledge can be gained by learners.

2.1.2 Evolution of MOOCs

Despite the rapid rise of MOOCs in 2012, it is also worth noting that there had been long-time preparation beforehand. As early as 2007, Professor David Wiley at Utah University taught “Introduction to Open Education” in Wiki, advocating open course resources available to users across the world. In January 2008, Professor Alec Couros from University of Regina offered “Social Media and Open Education,” an online course participated by many experts from the world through long-distance teaching. The experiences of the two courses, which can be said to be predecessors of MOOCs, laid ideological and technological foundation for the birth of MOOCs model.

The term “MOOCs” was coined by Canadian scholars Dave Cormier and Bryan Alexander in 2008. In September that year, George Siemens and Stephen Downes, also from Canada, applied this concept in the first MOOC “Connectivism and Connective Knowledge” (Li 2013). According to Stephen Downes, their original idea was not to create a MOOC; so to be exact, they were not the designer or implementer of the model of MOOCs. It was just they had clear ideas of what they wanted, and these ideas led to creation of MOOCs as they are now (Downes 2012). In 2011, Sebastian Thrun, Professor at Stanford posted the graduate course “Introduction to Artificial Intelligence” on the Internet, for which 160,000 students from over 190 countries signed up. As this new way of learning became increasingly seen on the news, commercial institutions, venture capitalists, media, and renowned universities, all jumped aboard, creating a tsunami of online education represented by MOOCs around the world.

Every word in MOOCs can be explained in multiple ways. This is one of the reasons that MOOCs can take diversified forms. In addition, criticisms of the early MOOCs drove people to design various forms of MOOCs for the purpose of improvement, which also contributed to the diversification of MOOCs. The most widely known forms are the cMOOCs (network-based MOOC) developed based on principles of connectivist pedagogy and the xMOOCs (content-based MOOC) represented by the course “Introduction to Artificial Intelligence,” which attracted many universities and commercial institutions to participate and design. XMOOCs have been developing faster and gathered more attention in the world. Most discussions about MOOCs, either in academic or commercial sense, are centered around xMOOCs, while cMOOCs as the origin of MOOCs have fallen into oblivion. More types of MOOCs are also popping up with constant criticism and reflection upon MOOCs, for example, SPOC (Small Private Online Course), DLMOOC (Deep Learning MOOC), Meta-MOOC, MOOL (Massive Open Online

Labs), MobiMOOC (Mobile MOOC), DOCC (Distributed Open Collaborative Course), PMOOC (Personalized MOOC), and MOOR (Massive Open Online Research). These and many other types of MOOCs keep showing up, indicating a new era of MOOCs has come. Although every form represents a different practice of online education, they all carry the genes of “free, open, and online,” so they still can be seen as the continuation and innovation of MOOCs. In fact, behind every new form of MOOCs there is always a new perspective, a new hypothesis, and a new concept of education (Zhu and Liu 2014).

Among these forms of MOOCs, we choose SPOCs for a relatively detailed analysis. As MOOCs usually have large numbers of registered learners, it is difficult to guarantee a learning process of high quality. SPOCs thus came into being to tackle this problem. Generally speaking, a SPOC would have dozens to hundreds of students, and only those who have met the requirements can be registered as its learners. At present, SPOCs target mainly at on-campus students and online learners. SPOCs represent a learning mode that combines classroom teaching and online teaching. In a SPOC, students can watch MOOCs lectures (or simultaneously utilize the online comments or other functions) in a flipped-classroom learning process (Kang 2014). SPOCs have advantages in that they can improve the quality of personalized learning, provide high-quality and consistent courses, realize the inherent educational value of technologies, and provide complete online courses (Jiang 2014).

2.2 International Development of MOOCs

Originally initiated in the USA, MOOCs have quickly swept the world like a “digital tsunami” stirred up by world-famous universities and massive capital investments.

2.2.1 *History of Development*

In January 2012, Udacity was founded as a for-profit educational organization by Sebastian Thrun, David Stavens, and Mike Sokolsky from Stanford University. Different from other MOOCs, Udacity, instead of working with other universities to form an extensive alliance, insists on developing their own courses, most of which have been developed by the company in collaboration with teachers who teach the courses. Although these courses, the majority of which are on computer science, are few in number, they boast very high quality and have special parts designed specifically for online teaching (Tang 2015).

In March 2012, Coursera, another for-profit organization, was founded. Coursera has attached importance to cooperation with famous universities ever since its foundation. Many universities in the USA, including some Ivy League universities, Duke University, Johns Hopkins, Rice University, University of Illinois at

Urbana-Champaign, California Institute of Technology, Berklee College of Music, and universities from other countries including UK, France, China, Italy, India, Australia, have published courses on this platform. Now, Coursera is the biggest MOOC platform in the world.

In September 2012, edX, a nonprofit MOOC platform, was founded by Massachusetts Institute of Technology and Harvard University. Its main goal is to establish a global classroom for online learners and expand the collective influence of universities and colleges (Tang 2015). More than 70 renowned universities are working with edX now. Apart from providing free courses to learners worldwide, edX also offer online teaching services for universities to use on campus, making it resemble something like an experimental base of a university in its research into the blended teaching that utilizes both online and offline resources in order to improve the teaching and learning effects of traditional classrooms (Wang 2013).

In July 2012, Google launched its first MOOC “Power Searching with Google,” given by Google search expert Dan Russel and attended by 155,000 learners from 196 countries online. About 20,000 learners completed their study. In September 2012, Google releases “Course Builder,” an Open Source Platform for building MOOCs, that enables ordinary teachers to create their own MOOCs.

In December 2012, FutureLearn was founded by The Open University (OU), University of Birmingham, University of Southampton, and other universities. This is the first MOOC platform in Europe outside the USA. Initially, FutureLearn sought only universities ranking at the top 1% globally, but with the development of the platform, it also began to cooperate with universities with a lower ranking but high-quality courses. These new partners are separated into two groups: centers of excellence for university departments recognized around the world for their expertise in a particular subject area, and specialist organizations for organizations known nationally or internationally for their expertise in a specific area. Following this scheme, some departments of University of Wollongong in Australia, The Hans Christian Andersen Centre at the University of Southern Denmark, and Foreigners University of Siena specialized in language teaching will all start to offer open online courses (Li 2015).

In 2013, Japanese MOOC start-up school was founded with the young working class in Japan as its main target audience, and it is trying to expand its influence in campus students.

In 2013, Veduca, a Brazil-based MOOC platform, was started. It has courses not only from Brazilian universities, but also from Harvard University, Columbia University, and other renowned universities.

In March 2013, Open2Study, the first free online education platform in Australia, was founded.

Other platforms including Iversity in Germany, WizIQ in India, and ALISON in Ireland were successively established. Iversity does not work with other universities or organizations, but instead recruits MOOC teachers worldwide. And like courseware providers such as Blackboard and Instructure, it also encourages teachers to create open courses on its cloud platform.

Supported by the European Commission, a platform named OpenupEd was launched by Pan-European MOOCs initiative which is hosted by eleven countries from European Union and under the lead of European Association of Distance Teaching Universities (EADTU). This is in order to confront against the USA in MOOCs market (Kang 2014).

2.2.2 *Current Status*

So far MOOCs have been growing rapidly around the world, covering vast regions in North America, Europe, Asia, South America, Africa, and Oceania. It is hard to accurately calculate how many educational organizations from how many countries have taken part in this revolutionary trend fueled by modern information technology. According to statistics, by now there are 32 MOOC platforms across the world: 14 in the USA, 1 ~ 3, respectively, in UK, Germany, Spain, Ireland, Australia, Japan, India, and Brazil (Tang 2015).

As of the end of December 2015, Coursera has worked with 140 organizations in 28 countries/regions including China, Hong Kong, China Taiwan, Denmark, Israel, Russia, Canada, South Africa, India, Colombia, Turkey, Mexico, Brazil, Germany, Italy, Singapore, Japan, Chile, Belgium, France, Australia, Sweden, Switzerland, USA, Britain, the Netherlands, Spain, South Korea. A total of 1553 courses on a range of areas including arts and humanities, business, computer science, data science, life science, mathematics and logic, personal development, physical science and engineering, social sciences are offered on the platform for an enrollment of 16,722,243 learners. EdX has launched 807 courses in 9 languages including English, Chinese, French, Portuguese, Italian. Over 1700 teachers and other staff members are offering learning support services, and more than 580,000 course certificates have been awarded to registered learners so far.

Credits acquired in learning MOOCs are beginning to be recognized by educational institutions and authorities in various countries/regions and will be gradually integrated into the formal educational system. On November 13th, 2012, the American Council on Education (ACE) agreed to evaluate several courses offered by top universities on Coursera. In February 2013, Coursera announced that five of its courses were approved by ACE for college credit recommendation, which means credits earned by students who learn these courses will be recognized by universities. This marks that MOOCs have formally been accepted by the regular system of higher education.

MOOCs still face a lot of uncertainties in their development even to this day. For one thing, MOOCs have yet to solve the many problems pointed out by their critics. For another, MOOCs, as a representative of online education, are still struggling between what they should have been and what they actually are, especially when they are in presence of the conservative-prone educational system. MOOCs still have a long way to go.

2.3 Development of MOOCs in China

In 1977, when meeting with Edward Heath, former British Prime Minister, Deng Xiaoping showed much interest in his account of the distance education model of an open university by means of radio and television. In February of the following year, Deng Xiaoping instructed to establish radio and television universities. In February 1979, the Central Radio and Television University of China and the 28 other radio and television universities across the nation started school, preluding the use of modern technology in Chinese education, and laying a certain foundation for development of information technology (online) education later. With the development of computer and network technologies, educational informationization began to sprout in the 1980s, and Chinese online education thus began to develop with increasingly deepened educational informationization. Since the 1990s, China's rapid development of computer and network technologies has provided a solid technical support and a rare opportunity for the development of online education. Marked by the start of the modern distance education project, China's online education entered a period of rapid development. In 2012, when MOOCs that represent innovation in both the service model and teaching model became known in China, people seem to have finally found the long-sought pathway and destination of modern information technology education.

2.3.1 History of Development

MOOCs came into China when they were spreading rapidly across the world in 2012. In China, MOOCs were studied and researched at first (mainly on introduction of the foreign practices) before they were applied in practice. Starting from May 2013, Chinese educational researchers and reformers began to be fully aware of MOOCs, which attracted attention from researchers not only of educational technology and distance education, but also of other fields, especially the field of higher learning. Academic discussions relevant to the topic have also been on the increase since then. As MOOCs take more colorful and diversified forms in China, it is difficult for us to give a complete and accurate description of how MOOCs have developed in China. So in the following, we will only show the general outline of this development.

In May 2012, Shanghai University Course Center (SHUCC) (<http://www.ucc.sh.edu.cn>) was founded, joined by 30 local universities in Shanghai. SHUCC facilitates not only online learning but also offline teaching. College students in Shanghai can register for courses offered by other universities, and mutual recognition of credits within the college alliance of SHUCC will become realized in the future.

In October 2012, the first Chinese MOOC platform TopU was founded by Guolairan (Beijing) Education Technology Co., Ltd.

In December 2012, Shanghai Able Electrical Co., Ltd. set up Zhihuishu.

In May 2013, Tsinghua University and Peking University joined edX. Tsinghua has over 30 courses for its edX program and offers 4 courses in the preliminary stage which are open to learners from the world. Peking University is to create 100 open online courses within five years. The new blood injected by Peking University and Tsinghua University, the two most prestigious universities in China, gives further impetus to the development of MOOCs in China.

In July 2013, Shanghai Jiao Tong University and Fudan University entered into a formal partnership with Coursera. Coursera will also be responsible for training of professors and teachers, so that the courses will be in line with the uploading and teaching standards of the platform.

In August 2013, Uniquedu launched Kaikeba.

In September 2013, “ewant” was initiated by the 5 Jiao Tung Universities in Taiwan and China (Shanghai Jiao Tong University, Xi’an Jiao Tong University, Southwest Jiao Tong University, Beijing Jiao Tong University and National Jiao Tong University) as a platform that provides free and open lessons for Chinese learners across the world.

In October 2013, Tsinghua University launched the MOOC platform XuetangX.

At the end of 2013, Educational Reform Committee of Chinese Adult Education Association, in conjunction with 47 of its affiliated organizations, founded MOOC Alliance for Adult Universities. In November 2014, it launched the first batch of courses online successfully.

In April 2014, Shanghai Jiao Tong University set up CNMOOC.

In May 2014, Tsinghua University announced recognition of MOOC credits.

In May 2014, icourse.cn and NetEase jointly launched China University MOOC (icourse163.org), which has become a MOOC platform that offers large numbers of open courses.

In May 2014, UOOC, a regional-university-league for MOOCs, was established by Shenzhen University together with 90 other regional universities. The league is dedicated to improving the balanced development of higher education and raising the ability of regional universities to cultivate talents and serve the society by integrating high-quality teaching resources of different schools, establishing a sharing mechanism of high-quality courses, and diversifying the methods of teaching and learning.

In February 2015, Peking University and Alibaba Group jointly founded Chinese MOOCs.

2.3.2 *Current Status*

MOOCs are still in active development in China. Not only are they taking various dynamic forms in practice, relevant researches in this field are also becoming increasingly abundant and profound, from the initial simple introduction of MOOCs in other countries to exploration of MOOCs with Chinese characteristics, and with more emphasis placed on the potential of MOOCs to have an influence on

Table 2.1 14 Chinese MOOC platforms

No.	Name	Established by	Time of establishment (Year)
1	Sharecourse	Netxstream Technologies, Inc.	2012
2	Zhihuishu	Shanghai Able Electrical Co., Ltd	2012
3	NetEase cloud classroom	NetEase	2012
4	TopU	Guolairen (Beijing) Education Technology Co., Ltd.	2012
5	XuetangX.com	Tsinghua University	2013
6	ewant	5 Jiao Tong Universities in both Mainland China and Taiwan	2013
7	Kaikeba	Uniquedu	2013
8	MOOC China	Open Company together domestic universities in China	
9	CNMOOC	Shanghai Jiao Tong University	2014
10	UOOC	About 90 universities including Shenzhen University	2014
11	MOOC Alliance for Adult Universities	Educational Reform Committee of Chinese Adult Education Association together with 47 of its affiliated organizations,	2013
12	China University MOOC	NetEase and Higher Education Press	2014
13	Railway School	Center for High-speed Railway Technology of Tsinghua University and TopU.com	2015
14	Chinese MOOCs	Peking University and Alibaba Group	2015

Chinese comprehensive educational reform and the ensuing huge value. Development of MOOCs in China has been driven by the common efforts of institutions of higher learning, professional educational companies, and technology companies. In our survey of MOOCs in China, we have found 96 platforms of this kind through Web searches. Among these platforms, we further select 14 (as shown in Table 2.1) that we believe to be MOOC platforms in the real sense, following the standards including open registration, free choices of courses, having a service system to support the learners, having tutors, having discussion areas, and having evaluation systems.

XuetangX.com has established partnerships with over 20 universities from both home and abroad including Stanford University, Tsinghua University, Shandong University, and National Taiwan Normal University. Some edX courses can also be accessed through XuetangX.com, which are now offering in total 905 courses. What is noteworthy is that XuetangX.com also offers degree programs. National Engineering Degrees Graduate Education Steering Committee has worked with XuetangX.com to build public platform for Graduate Online Courses of National Engineering Master Degrees for graduate students in China who are working for a

master degree in engineering as well as learners in other countries. The public platform provides open courses for free, but charges fees certification and credit recognition. The first phase of its implementation, the platform offers courses covering 14 disciplines. Relying on XuetangX.com, Tsinghua University has also launched the first master of engineering program in China—Data Science and Engineering—following the model of blended teaching. Tsinghua University and Fudan University have also introduced a minor in finance on XuetangX.com, which is taught and evaluated both online and offline. The two schools mutually recognize the credit of this online course.

CNMOOC, partnering with 53 universities and cooperating with Shanghai Zhenhua Heavy Industries Co., Ltd., the Pilot Software Engineering Schools Association, and Chongqing University City, offers 194 courses that cover philosophy, economics, law, education, literature, history, science, engineering, agriculture, medicine, military science, management science, and art. A total of 109 of them provide certificates, and 85 do not; 65 courses have been ended, 82 are in progress, and 47 are about to begin. The courses are taught predominantly in Chinese. A total of 188 courses are in Chinese and 6 in English.

Chinese MOOC has partnerships with only two universities: Peking University and National Taiwan University. Besides partnering with universities, the platform also invites individual teachers to join them. By now, there are 14 teachers who are working on the platform as independent individuals. A total of 30 courses are open on the platform on a range of subjects including computer science, statistics and data analysis, mathematics, chemistry, physics, social sciences, law, life sciences, education, arts, humanities, medicine, health and society, business and management.

China University MOOC (icourse163.org) is working with 56 Chinese universities and has launched 767 courses on literature, art, philosophy, history, economics and management, law, basic sciences, engineering, agriculture, forestry, medicine, etc.

UOOC is joined by 91 regional universities from 48 cities of 24 provinces and published 53 courses on art, literature, history, philosophy, economics, law, education, science, engineering, agriculture, medicine, and management. Around 25,000 learners from 50 universities have studied courses on the platform.

Apart from working with local MOOCs, Chinese universities also went abroad to establish cooperative relationships with international MOOCs. Currently, Coursera is joined by 8 renowned universities in China, including Nanjing University, Shanghai Jiao Tong University, Fudan University, Xi'an Jiao Tong University, Peking University, National Taiwan University, Hong Kong University of Science and Technology, and Chinese University of Hong Kong, which are offering in total 123 courses. Five Chinese universities are in partnership with edX, including Hong Kong University of Science and Technology, Peking University, Tsinghua University, University of Hong Kong, and Hong Kong Polytechnic University, which are offering a total of 66 courses.

2.4 Controversies About MOOCs

Like many other new things, MOOCs receive both praises and criticisms in their development. Initially, the leading voice in the dense coverage of MOOCs was full of high expectations. However, with the continuous expansion of MOOCs in 2012, voices of criticism got increasingly louder the next year, the most representative being the article “Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility” written by John Daniel. These dissents forced people to think more reasonably when MOOCs were questioned in aspects of intellectual property, business models, quality assurance, credit recognition, participation, and high dropout rate, etc. Although more and more people are raising their doubts, MOOCs still manage to develop at a fast speed.

2.4.1 Pros

Supporting voices and actions can be found in various levels and aspects of the society, which also demonstrate the massive influence and great visibility of MOOCs.

Firstly, governments from many countries have shown great expectations of MOOCs. American President Obama wanted the “innovative trend” of MOOCs would lower the educational costs while keeping high quality. David Willetts, British Minister for Universities and Science, expressed hopes that the creation of FutureLearn could keep Great Britain at an advantageous position in global competition of higher education. In the 5th National Education Technology Plan, *Future Ready Learning: Reimagining the Role of Technology in Education*, released by the U.S. Department of Education’s Office of Educational Technology in December 2015, MOOCs were taken as an example to illustrate the great advantages of technology in organizing teaching and learning. China’s Ministry of Education issued *Opinions on Strengthening Construction, Application and Management of Online Open Courses in Institutions of Higher Learning*, in April 2015, mentioning expediting the progress of constructing online open courses and platforms suitable to Chinese practical conditions so as to improve course application and management.

Secondly, MOOCs are seen as an important opportunity to bring a change to education, especially higher education. The best and most powerful demonstration can be seen in the fact that so many world-renowned universities are rivaling each other in development of MOOCs. Stanford President John Hennessy pronounced that the MOOC was a “digital tsunami” that would sweep everything of the traditional education off, and that today’s universities would be extinct like the dinosaurs. In 2013, an article published on American Interest claimed that “In fifty years, if not much sooner, half of the roughly 4500 colleges and universities now operating in the United States will have ceased to exist.” Vice-Chancellor of the

University of Southampton Don Nutbeam remarked that “it’s mooc or die.” He further claimed that universities must embrace MOOCs or they would face a tough future, as he believed “those that choose not to risk being left behind, and missing out on the opportunity to develop a more innovative—and future-proof—approach to higher education.” An article in Boston Globe wrote that when Anant Agarwal, one of the founders of edX, described his plans on the seventh floor of MIT’s Stata Center, you could almost imagine those buildings shake... Time magazine journalist Amanda Ripley wrote, “... MOOC providers will help strip away all the distractions of higher education—the brand, the price and the facilities—and remind all of us that education is about learning.” (Zhao 2013) She also published an essay named “College Is Dead. Long Live College!” to describe her understanding of MOOCs’ impact on higher education and the possibilities they might bring.

Lastly, MOOCs have been sought after by massive capital investment in the form of either venture capital or charitable funds. Huge injection of commercial capital is one contributor to the fast development of MOOCs. Well-known VC firms such as KPCB, Creylock Partners, and Charles River Ventures have all invested a lot in MOOCs, and each of the best known MOOC providers is able to raise tens of millions of US dollars. Large amounts of capital advancing into this field without hesitation at a time when there is still not a clear business model for MOOCs to follow indicate a firm belief of capitalists in the future of MOOCs. As a nonprofit educational institution, Khan Academy founded by Salman Khan received considerable funds. In 2010, Google provided 2 million USD for it to develop and translate the courses into the most used 10 languages. Bill & Melinda Gates Foundation provided a total of 5.5 million USD to support Khan’s business (Khan 2014).

2.4.2 Cons

Although hailed by many, MOOCs are bound to be doubted, or even opposed, especially when they are examined in comparison with the existing universities and colleges. Typical criticisms of MOOCs include: ① Learners of a MOOC can become learning mates, but will never become classmates. The essence of the so-called elite education is to be accepted by the elite society, instead of learning elite knowledge; ② No matter how perfect Internet education can become, it will never be able to make up for the humanistic environment of a university campus, nor will it be able to truly cultivate talents of humanistic qualities. ③ To adapt to Internet environment of video broadcasting, lecture videos have to follow knowledge points, and the course content will inevitably be fragmented. ④ It is hard to imagine that a single course of a renowned professor from a top university would be able to accommodate all the different conditions across the world, or to satisfy the practical needs of all schools and all students. It is also similarly hard to imagine that all students in the world are learning the same course. Also, according to some, it is only a marketing strategy for MOOCs to be free of charge. They are free

because they need a high CTR, so that they can attract new users to finally achieve their business goals. Although they are free at registration, they will try to make capital of examination and certification. Moreover, those MOOCs already in operation are not fully open either, and all of them have explicitly made announcements about their copyright ownership. Therefore, it is highly possible that the so-called openness is nothing but a beautiful disguise used to hide their true intentions.

Even in actual operation, MOOCs also face many problems, which easily become targets for their opponents.

The first is low rate of completion. MOOCs have been embraced for its massiveness and criticized for its low completion rate. Sebastian Thrun, founder of Udacity, pointed out that although there are many who are enterprising and familiar with the Internet in the registered learners, the rate of completion is only 10%. It is disappointingly 5–16% on the whole. However, others argued that it should be noticed that many people choose a MOOC just want to satisfy their own learning needs rather than to take an exam or get a certificate. So it is unconvincing to judge MOOCs by the standards of success rate of students at regular schools.

The second is the doubt about the high teaching quality. Johnson pointed out that *Microeconomics* and *Introduction to Artificial Intelligence* on Coursera are video lectures produced by famous professors from famous universities, and their content is also of high quality. However, they are still very traditional in the way of teaching. When Peking University launched its first batch of MOOCs on edX, *The Atlantic* commented on the low quality of these courses in the report describing challenges faced by China in the field of online education. Some hold that many MOOCs do not utilize information technologies and that they are just the conventional lecture-based teaching moved from offline to online. So they are totally unattractive to today's learners. Others worry that if second-rate or even third-rate schools can also publish their courses online and call them MOOCs, the quality of MOOCs will become really inconceivable.

The third is questions on whether MOOCs are fully interactive. Dynamic interaction is one thing that distinguishes MOOCs from traditional video open courses. However, there is no forum yet for some of the MOOCs which causing poor interaction in teaching. Our survey results have also showed that MOOCs in China fail to achieve a satisfactory interaction. Johnathan argued that it is impossible to have highly efficient communication between students and teachers, or among the students, and that MOOC will not become an effective alternative to real school education.

The fourth is about their scope of application. Firstly, MOOCs may not be suitable for all fields of education. Some scholars believe MOOCs are more suitable for higher education. For primary and secondary school, education is not only about knowledge impartation, but much more about cultivation of personality and morality. Thus, MOOCs can be used as a supplementary means of primary and secondary education, and not to take over entirely. But others believe that while MOOCs emerge in the field of higher education, they can also serve as useful guidance for basic education. For example, many students in primary and middle

schools like the courses on Khan Academy very much. Secondly, MOOCs may not be suitable for learners of all levels. Some believe that courses offered by prestigious universities such as MIT and Harvard may be more suitable for students of Peking University, Tsinghua University, and other first-rate universities. Others, however, argue that MOOCs should be provided to those that need them most, rather than those who are already very excellent. Students of second-rate or third-rate schools should learn the courses of world's top universities, and we should transmit these high-quality resources to the countryside, mountainous areas and poverty-stricken regions via information technology so as to narrow the gap in educational achievements.

Confronted by these doubts, questions, and disputes, Stanford President has said, I cannot tell you how MOOCs are going to change education, but I will be a part of it instead of sitting and watching. According to Min Weifang, former Party Secretary of Peking University, Executive President of Chinese Society of Educational Development Strategy, the rapid growth of information technology and the emergence of a network society have brought huge changes to education, in terms of our ways of teaching, learning, thinking, the teaching structure, educational structure, mode of education, and system of education. Now that MOOCs have come, we need first to learn them, and then, we will study what we can get from them. It is stupid to refuse the advanced things in the world.

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