OBSERVATORY
of Educational Innovation
Tecnológico de Monterrey

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Edu Trends

MOOC

FutureLearn

Ivesit

Massive Open Online Courses

Coursera

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Introduction:
Massive Open Online Course

Massive Open Online Courses (MOOCs) consists of classes delivered on a technological platform enabling the teaching-learning process for thousands of students.

These courses emerged as a solution to the challenges that educational institutions and organizations are facing in times of information overload: there is a need to train a population searching for low-cost quality education (Cormier, 2010), while expecting short-term results without having to wait for a traditional school term to take a course. The flexibility offered by this model allowed universities and other organizations to reach out to a population who was overlooked, and connecting them to an unified learning experience.

The origin of MOOCs can be traced to two phenomena: the boom of Open Educational Resources (OER) and Open Social Learning (OSL). In the first decade of the 21st Century these trends paved the way for the first MOOC to appear toward the end of 2010. This was the result of an enormous amount of open content available in an organized manner, and a massive amount of users willing to take that content to cover their learning needs (Pernías, Luján, s.f.).

The model is based on the pedagogical theory of connectivism developed by George Siemens and Stephen Downes. According to Wade (2012), —who has thoroughly explored this learning theory— connectivism can be seen as a guide-providing theory for instructional development within the education context because of the notion that learning relies on building and connecting knowledge that is distributed in a network of connections.

In essence, we can synthesize the principles of this theory as follows:

- ▶ Learning is a process focused on connecting information or sources of information.
- ▶ The capacity to acquire new knowledge is more relevant than current knowledge.
- ▶ It is necessary to keep and maintain connections to facilitate continuous learning.
- ▶ The capacity to find common points among disciplines, ideas and concepts is a key skill.

"[Connectivism] is a break-through model of the traditional education programs, where students learn from other students, and at the same time, it fosters participating students to further develop as an interconnected system inventing itself".
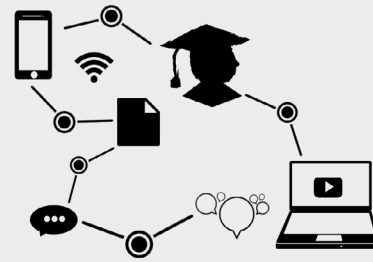
Sergio Ortiz

This relation between MOOCs and connectivism proves the change in paradigm that is molding the online education system and potentially the traditional system as well. There are no more time and space barriers: students have open access to resources with which they build their knowledge.

Palphy, 2013. mooctweets. CC Attribution

TYPES OF MOOCs

1 xMOOC
The most common MOOC model

The "x" represents a commercial MOOC, that is, offered through commercial or semi-commercial platforms such as Coursera, edX and Udacity.

These MOOCs emphasize a traditional learning centered in playing videos and conducting small test-type exercises. The course is developed around a homeroom teacher and basic curricula.

2 cMOOC
Connectivity MOOC

The "c" stands for connectivist MOOCs. These cMOOCs were the first to emerge. These courses emphasize creating knowledge through students, on creativity, autonomy, social and collaborative learning.

Courses are similar to postgraduate seminars: subjects are just a starting point to engage in discussions among participants, and therefore, the main part of learning resides in the interaction among them.

3 DOCC
Distributed Online Collaborative Courses

In these courses, material is distributed among students from different institutions, but the management of these courses varies, because the DOCC model is not based on a pedagogy centered on a single "expert" or institution in particular, but rather the contrary, DOCC are built from the experience of participants coming from diverse institutional contexts. Students can communicate online with their classmates in other schools.

4 BOOC
Big Open Online Courses

These are similar to xMOOC, but the course is limited to the number of participants (usually no more than 50 students.)

5 SMOC
Synchronous Massive Online Courses

The differentiating factor of these courses is that they're live classes, and students are connected online simultaneously.

6 SPOC
Small Private Online Courses

SPOC use the same infrastructure of MOOCs, although their scope is not massive and can include closed elements in their contents. These courses have a limited number of participants, similar to BOOC but, with student-teacher interactions based on the conventional classroom model. In fact, they're similar to the flipped classroom model.

Trend & Adoption

In November 2012, The New York Times stated that 2013 would be the year of the MOOCs, because of the edX platform launch—product of the alliance between Harvard University and MIT— as well as the rapid growth of other suppliers such as Coursera and Udacity. It was evident that MOOCs had quickly become a trend of interest for some of the best universities, which began to offer quality education to the world by using different platforms. This offer in courses allowed participants to interact with renowned teachers or experts, as well as with other interested parties on those subjects, thus contributing to the collaborative learning.

This new outlook was seen as a significant threat to traditional education. Prestigious universities were able to offer no-cost quality education in a scalable model, which was capable of providing service to thousands of participants in a single session, without strict admission processes or restriction to school terms, and with the option of certification or formal accreditation.

Notable cases such as StraightLiner which is offering courses with transferable college credits at affordable prices ($99 USD per month and a rate per course of $49 USD), and even more disruptive the case of Georgia Tech who partnered with Udacity and AT&T to offer a Master's Degree in Computer Sciences through MOOCs for less than $7,000 USD, as compared to the traditional on campus program costing more than $40,000 USD (for Georgia non-residents). Georgia Tech received 2,360 applications in a 3-week period, that is, 75 per cent more applications than what the campus usually receives in one year; the first class began with 375 students, a group 95 per cent larger than an on campus class.

These cases show that, when combining curricula and traditional content with tech-activated pedagogy, it is possible to promote affordable scalable quality education.
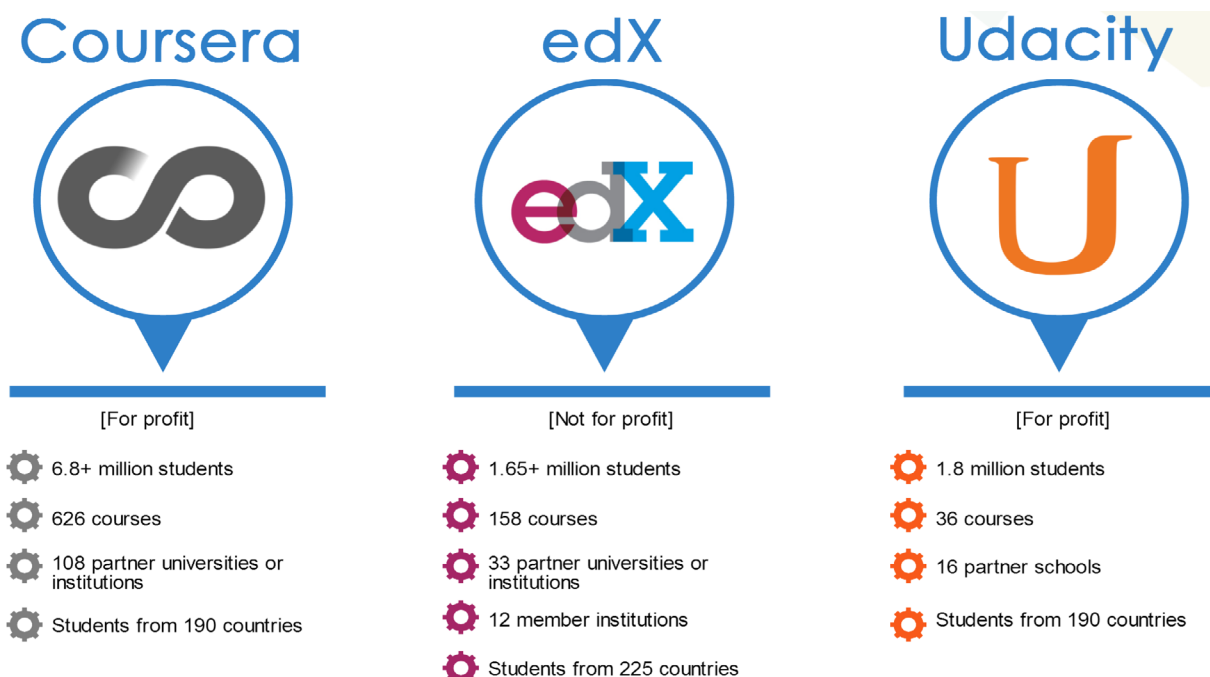
Coursera

[For profit]

- 6.8+ million students
- 626 courses
- 108 partner universities or institutions
- Students from 190 countries

edX

[Not for profit]

- 1.65+ million students
- 158 courses
- 33 partner universities or institutions
- 12 member institutions
- Students from 225 countries

Udacity

[For profit]

- 1.8 million students
- 36 courses
- 16 partner schools
- Students from 190 countries

Figure 1. Main MOOC platforms
Sources: mooc.com, edx.org, coursera.org and udacity.com (2014)

However, this education trend took a different turn than what The New York Times predicted. In the adoption curve of technology trends for 2013, Gartner Consulting Group placed MOOCs between the end of the peak of over-dimensioned expectations by the community and the beginning of the trough of disillusionment.
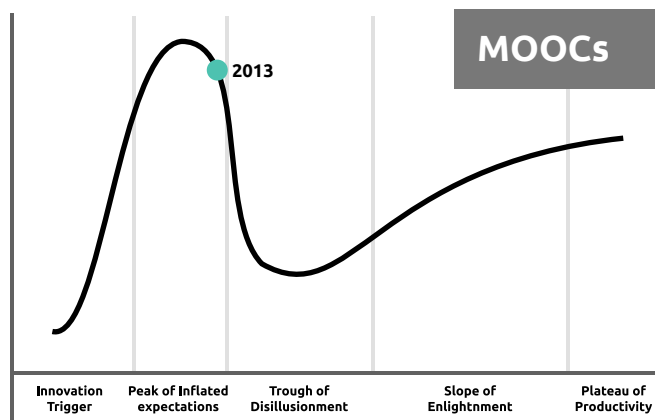

Figure 2. Adoption curve of technology trends
Source: Adapted from Gartner Hype Cycle for Education, 2013.

This position between two stages describes the disillusion resulting usually from enthusiasm and nonrealistic expectations about a trend, such as the case of this model. In 2012, it was stated that MOOCs would compromise traditional education, and they would represent a "tsunami" directly impacting universities and it was even said that many would disappear. But soon, during implementation, the model faced criticism and significant difficulties with respect to economic sustainability, accreditation and academic quality, while terminal efficiency rates questioned their feasibility; the trend began its descending curve.

On the other hand, the potential of success for MOOC pioneers was high due to the garnered experience, and at par, entrance barriers were created for those who later rode the adoption wave. However, although initiatives with little success are the ones who generate the trough of disillusionment, this does not mean that those who had positive experiences manage to advance toward the slope of illumination (clarity of focus) and consolidate on the plateau of productivity.

New Media Consortium's (NMC) Horizon Report 2013, considered the adoption or change in educational institutions of MOOCs could happen in one year or less, in the Horizon Report 2014 we see MOOCs continue to dominate the discussion regarding alternative education methods. Considering demographic data gathered in 2013 (mainly Coursera courses), we estimate an impact on the short-term on continuous education programs and corporate extension to adapt to the needs of a changing market.
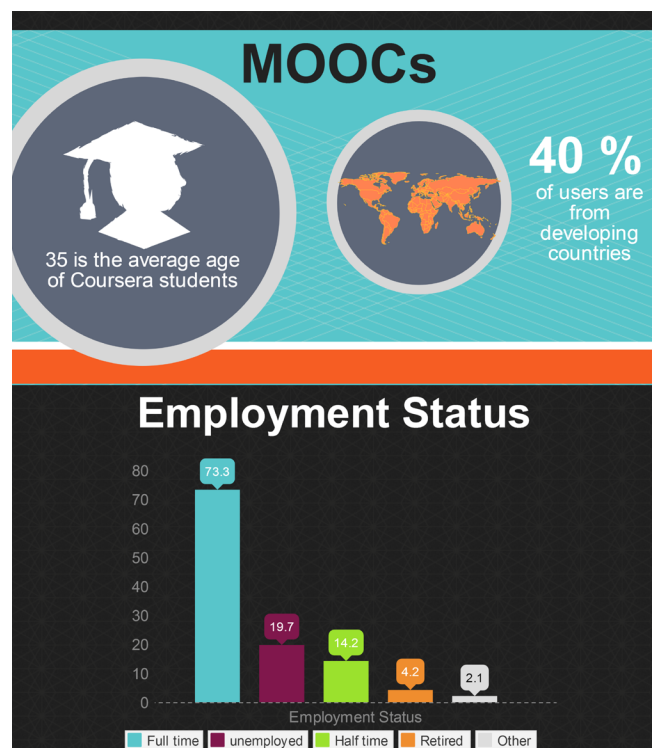

Figure 3. Demographic data of Coursera students
Source: Adaptation of Cusack, MOOC Infographic, 2013.

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MOOCs
Original Idea vs Today

In 2008, George Siemens launched the first MOOC along with researcher Stephen Downes and instructional technologist David Cormier. Their course *Connectivism and Connectivist Knowledge*, was far removed from the current type of MOOC: it was not "massive" as we understand it today (it attracted about 2,300 participants); however, Siemens was not especially interested in scale, but connections.

This group of Canadian technologists, rather than teach, facilitated the course with the fundamental idea of providing students with the basic framework while they led from behind the scenes. They did not limit participants to use a single learning platform; on the contrary, they were encouraged to seek other means to enrich their knowledge. With this proposal Siemens tried to revolutionize the way in which this model was conveyed.

Siemens' connectivism proposal is based on the fact that knowledge is something that does not reside in the mind of one person, but it is distributed through networks. That is, knowledge is not only the content a person acquires through learning, but also through apps, contacts in the address book, websites, or any other means providing access to information.

Education is therefore "a process of forming connections" by which "we increase our capacity to know more" (Siemens, 2008), by adding nodes to our personal networks and learning to use them. Therefore, developing in students the competencies to interact in ambiguous and changing contexts in a collaborative manner makes sense in these spaces.

"Learning is not just about the contents of a lesson. It's about belonging to a community".

George Siemens

Gianpiero Petriglieri (2013), meanwhile, analyzed current MOOCs plans in his article *Let Them Eat MOOCs*, where he strongly criticized them, but from an interesting point of view. To him, these types of courses may be used to reduce costs in academic institutions with financial problems, and may become a weapon against the faculty. They could even worsen educational unevenness, instead of eliminating it, by providing empty credentials in meaning and connections (which makes these valuable).

According to Petriglieri, the worst issue about the current situation is that MOOCs may become a convenient excuse for giving up on the reforms needed to provide broad access to higher education. This education, despite the idealist proposal whereby MOOCs emerged, is geared solely toward obtaining employment and economic benefits in the long term.

From this perspective, the long awaited techno-democratization of education is seen more as a masked aristocracy. Therefore, for the author, MOOCs are not the answer and only make professors' activities less relevant.

Although, in essence, these courses continue having a lead professor, MOOCs are currently designed strategically to boost self-management of the participant's learning process and developing collective learning in a single social network; this provides for many variations of the courses, depending on the institution offering them and the platform used for that purpose.

Key attributes of these courses include the great flexibility offered to participants, as compared to a traditional course, low

Tallina, 2013. I MOOC. CC Attribution-NonCommercial-ShareAlike

operating costs for universities because of their high scalability (the number of enrolled students in the course does not increase operating costs) and issuing certificates at low cost. Tutoring services during the course are usually limited, but universities could offer them as an additional paid service to meet the specific needs of students.
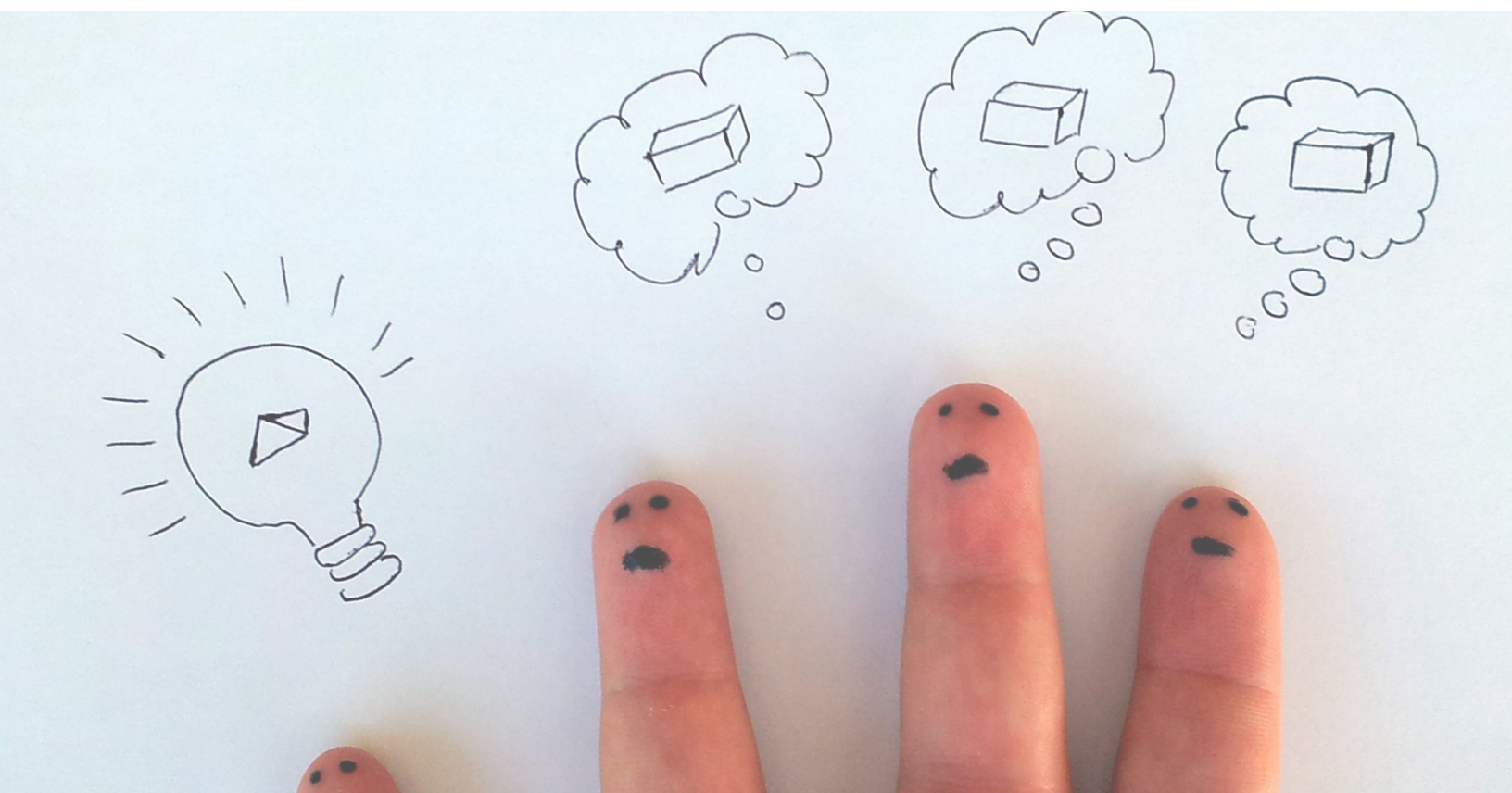
Levent-Levi, 2012. Disruption. CC ShareAlike

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Relevance for the
Tecnológico de Monterrey

MOOCs –as a new way of social learning– have great impact on our Institution because they present a series of questions to researchers, academics and administrators with respect to effectiveness and accreditation of this teaching-learning format.

We must define, analyze and assess each element, each connection, and each criterion with which these courses are developed in order to guarantee academic quality. Meanwhile, to know the educational needs of modern society, and what potential students seek in these courses, will give us the guideline to be part of this trend.

In order to have an idea of the increased popularity of these courses, we need to observe statistics offered by Google Trends. Following is the search behavior of the main MOOCs suppliers:

This chart shows the relevance of different platforms based on Google searches. The platform which piques users interest the most, as compared to others, is Coursera.

Tecnológico de Monterrey's positioning in this trend becomes relevant because it may provide the following benefits:

▶ To position the brand and our best professors
▶ To boost MOOCs as a tool to gain and attract students into our formal programs
▶ To offer an alternative program for corporate training and continuous education
▶ To enter into new markets
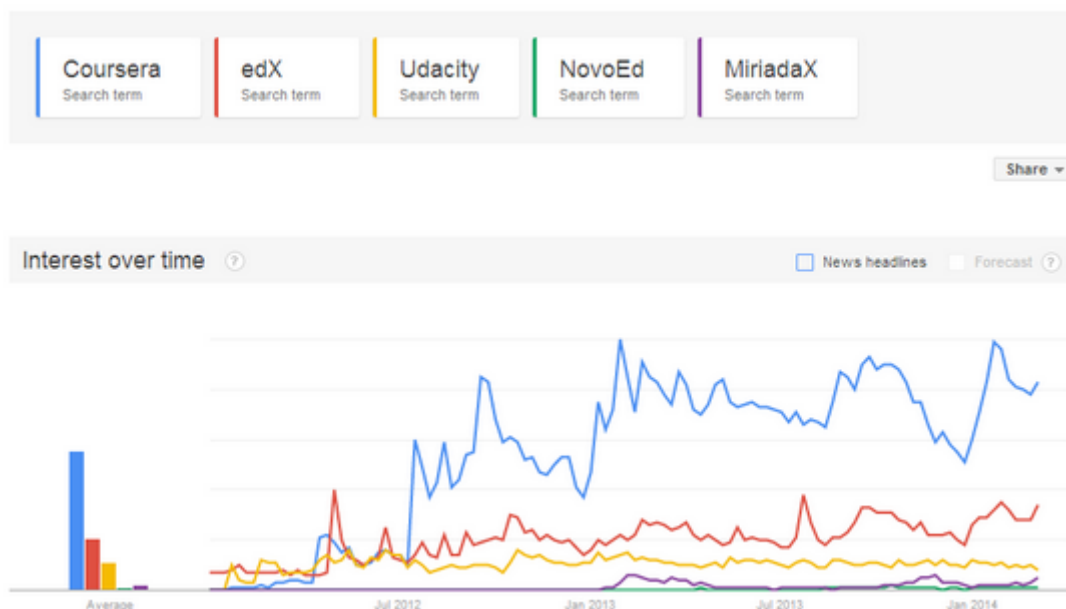▶ To develop a new economic model to service emerging markets with high growth potential

Figure 4. Search behavior of main platforms. Source: google.com/trends, 2014.

MOOCs Evolution

2012

February 2012
Sebastian Thrun and Peter Norvig create Udacity

April 2012
Stanford professors Andrew Ng and Daphne Koller, create Coursera

May 2012
Harvard University and MIT create edX

July 2012
12 Additional universities join Coursera, among them: The University of Edinburgh, the University of Virginia, the École Polytechnique Fédérale de Lausanne, California Institute of Technology, Duke University, Georgia Tech, John Hopkins University, Rice University, University of Illinois at Urbana-Champaign, among others

July 2012
University of California, Berkeley joins edX

August 10, 2012
Coursera reaches one million students enrolled in its courses

August 10, 2012
Udacity announces its registration at more than 739,000

August 21, 2012
MIT OpenCourseWare, OpenStudy, Peer to Peer University and Codeacademy launch Mechanical MOOC, an introductory course to the Python programming language

The Mechanical MOOC Presents...
A Gentle Introduction to Python

August 2012
Coursera announces it will request students to sign an honor code in response to reports of plagiarism

September 2012
CoedX offers its students the option to validate their learning through supervised testing

September 2012
Coursera announces its expanding. The MOOCs platform announces 17 universities joined the project, among them: Brown University, Columbia University in NYC, Hong Kong's Science & Technology University, University of Florida, University of London, University of Melbourne, University of Pittsburg, Mount Sinai School of Medicine, among others

september 2012
Stanford University announces the launch of a new MOOCs platform: Class2Go

September, 2012
The University of Colorado through its online campus announces it will accept transferring academic credits in its Computer Science class

September 2012
Google announces the creation of CourseBuilder, an open code software to create courses online

October 2012
Texas University joins Harvard, MIT and Berkeley to offer MOOCs in the edX platform

October 2012
Minnesota State prohibits the use of Coursera

October 2012
San Jose State University adopts the flipped classroom format by replacing traditional classes with videos posted on the edX platform

December 2012
British universities join the MOOC movement by offering courses on FutureLearn. The University of Birmingham, Bristol University, Cardiff University, University of Exeter, Lancaster University, University of Leeds, University of Southampton, University of Saint Andrews and University of Warwick

2013

February 2013
Tecnológico de Monterrey joins Coursera to offer online courses in Spanish and English

April 2013
San Jose State University in California announces its expansion of MOOCs on edX
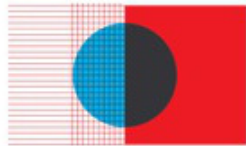
May 2013
Professors from Harvard's School of Arts & Science demand the formal supervision of MOOCs offered through this university on the edX platform

MOOC RESEARCH

June 2013
Bill Gates finances the MOOC Research Initiative project with the purpose of evaluating the effectiveness of MOOCs

July 2013
Blackboard announces the launch of a new MOOCs platform

Blackboard   MOOC

July 2013
San Jose State University announces it will close its online courses offered on Udacity because more than half of its students failed their final exams

San José State
UNIVERSITY

September 10, 2013
Google announces alliance with edX
One year after creating the Course Builder platform, Google announced the migration of all posted courses to the new MOOC.org platform

September 17, 2013
MITx presents the XSeries initiative
MIT announces full academic programs will be available in a series of models. Those who successfully complete all modules, may obtain a passing certificate from this institution

2014

January 10, 2014
Only a few months after edX announced its XSeries, Coursera announced its Specializations series with certificates

MOOCs at the
Tecnológico de Monterrey

On February 21, 2013 our Institution joined Coursera, becoming the first private university in Latin America to participate in this platform, offering courses in Spanish and English.

We opted to join Coursera because it is an educational company partnering with the best universities worldwide, offering high quality courses. In fact, as of February 2014, Coursera has exceeded 6.5 million users, it has more than 100 affiliated universities and provides more than 600 courses.

The Tecnológico de Monterrey-Coursera alliance surfaced after trying to define the particular objectives that would benefit our university, which were:

▶ To offer the world the experience of a Tecnológico de Monterrey course
▶ To reach new audiences and increase the attraction of students toward the Tecnológico de Monterrey
▶ To reinforce our position as leaders in innovation and academic excellence
▶ To experiment with the hybrid model on campus

This alliance brought forth the production of seven courses in 2013, achieving the participation of more than 137,000 students in 142 countries. Therefore, we succeeded in positioning the Tecnológico de Monterrey and our professors in this community. In fact, 41 per cent of enrolled students in these courses stated they did not know about Tecnológico de Monterrey prior to this experience.

Did you know about **Tecnológico de Monterrey**?

Yes, reason to sign up **32%**

Yes, not a reason to sign up **32%**

No **41%**

Presence in **142 countries**
Top 10 in volume

Chile **3%**
Ecuador **4%**
Argentina **4%**
Venezuela **4%**
Brazil **5%**
Peru **8%**
US **8%**
Spain **14%**
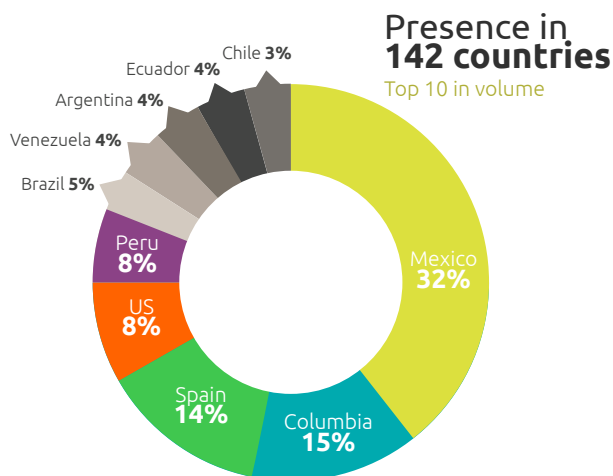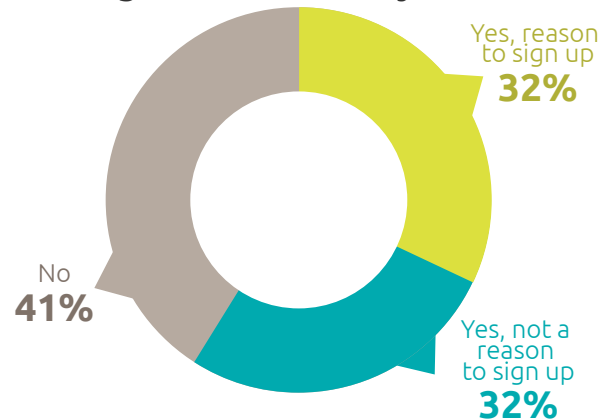Columbia **15%**
Mexico **32%**

Figure 5. Our students in Coursera, 2013.

Our 2014 offer in Coursera consisted in the seven renewed courses, in addition to completing the offer of remedial courses including Introduction to Computers and Writing Fundamentals in Spanish. Some of these courses will be offered more than once in one year.

Hybrid Courses
at the Tecnológico de Monterrey

Among the courses offered at Coursera, two of them pertain to the contents of Math and Physics remedial courses. During the fall semester of 2013, with the purpose of testing and experimenting on the advantages of the hybrid form with the Flipped Classroom/ Learning methodology, we designed a strategy to offer these subjects to campus students, and achieved a participation of 13 groups (12 professors and 517 students) in this project.

Showcasing enriched materials prepared during the production and operation criteria of Coursera, it was possible to liberate in-class time to conduct more exercises and encourage active learning.

"MOOCs must be integrated into the hybrid model of the Tecnológico de Monterrey. I have been able to enrich my in-class course, using class hours, to make it more relevant for my students and also to resolve real or practical scenarios presented by Coursera participants".

Fernando Sandoval

By experimenting with this methodology, we found that:

▶ In general, students who took the flipped classroom courses prefer in-class models. However, both professors and students attribute this preference to the fact that they were not previously prepared for this type of model.
▶ Students indicated they preferred the hybrid course as compared to an online course, because they need a teacher present guiding them in their learning.

▶ Statistically there was no substantial difference in the approval percentages among the traditional group and the hybrid group.
▶ The professor continues to be the decisive factor in this form, but the teacher's role changed from professor to learning facilitator, steered by the guidelines of this model to carry out his/her function.
▶ Most students were very satisfied with the hybrid form (flipped classroom) and its benefits, confirming they will take again a course of this type. Those who did not like it, acknowledged it is a good form for those with self-management learning skills.

Completion efficiency,
motivation, and behavior patterns

In general, efficiency of completion –understood as the fraction of students initially enrolled who satisfactorily complete a course– of MOOCs continues to be very low, and although there are exceptional cases of 20 per cent, such as the *Functional Programming Principles in Scale* from the École Polytechnique Fédérale de Lausanne, this is not the best criteria to judge the success of these courses. This information can render an incomplete vision because it does not consider factors such as the wide variety of goals and diversity of motivations among participants.

Romero, 2012. CC Attribution-ShareAlike
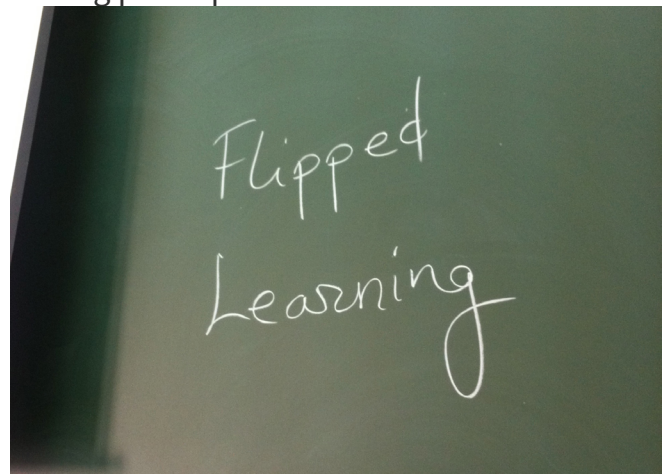
People enroll in MOOCs for different reasons such as general interest, curiosity, academic or professional support, to establish contacts, among others, and not necessarily look for a letter of credentials. In addition, the entry and exit barriers in these courses are low, because participants can enroll at any time and abandon the course in a similar manner.

Phil Hill, educational technology consultant and analyst, identified five classes of students who participate in MOOCs which may help us understand the behaviors within these courses –these were also identified when analyzing data generated in the courses we offered at Coursera–:
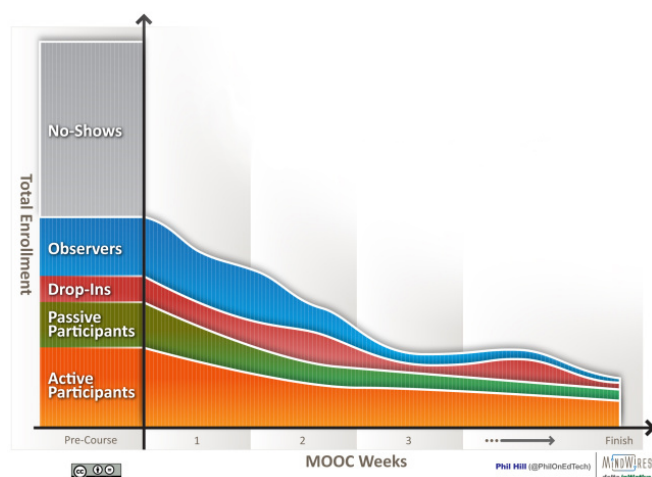

Figure 6. Coursera-style MOOCs students patterns
Source: Adapted from Phil Hill, Emerging Student Patterns in MOOCs: A (Revised) Graphical View, 2013.

▶ **Absent (does not show up).** They enroll, but don't visit the platform again.

▶ **Observers.** They read the content and the discussion forums. They partially carry-out activities.
▶ **Sporadic participants (withdraws).** They get involved partially or completely only in specific sections.
▶ **Passive participants.** They consider the course as content to be consumed. They watch videos, take tests, but do not tend to participate in other activities such as discussion forums.
▶ **Active participants.** They have the intention of completing the course and participate in all activities, including discussions in blogs or other types of social networks.

The success of MOOCs can not be estimated in the same way, based solely on the number of students who complete the course as compared to those who enrolled, because there is no accreditation or significant cost.

The efficiency of completion is a metric for traditional courses where clear objectives are understood by everyone: students want to complete the course and obtain credits. Professors want the same. However, (in MOOCs) there are students who enroll without the intention of completing them, and there are professors whose priority does not include their students completing the course (Kolowich, 2014). It is more important for them to rate it according to the reasons for enrollment and to judge it in terms of student expectations, that is, what they expect to obtain when taking MOOCs.

THE OPINION OF OUR PROFESSORS

¿WHAT IS THE MOST OUTSTANDING FEATURE YOU CAN MENTION FROM YOUR EXPERIENCE AS A MOOCS PROFESSOR?

ARTURO MOLINA

"To share our knowledge and experience with multiple profiles, nationalities and cultures. Also, to promote innovation and entrepreneurial competencies among participants."

SERGIO ORTIZ

"The opportunity to have a positive impact on so many people. I firmly believe you can transform the lives of people driven by self-improvement around the world through education."

RAFAELA BUECKMANN

"To be a MOOC teacher is a unique experience. I especially didn't think it was possible to generate so much empathy and relationships with my students, as I did."

PEDRO PONCE

"The massive impact of a course changes radically the perception you have about onsite courses, where the professor can only tend to a reduced group of students as compared to the massive concept of MOOCs."

FERNANDO SANDOVAL

"The connection of knowledge and experiences has transcended the period in which the course is given and I have been able to create a learning community on the subject of entrepreneurial families.
To date, people have contacted me from different cities in Mexico, Latin America and Europe asking for advice, a conference or even to begin a process of intervention or consultancy."

PATRICIA SALINAS

"An educated world is certainly a better world for us all. This idea can be found in the initiative brought by different platforms offering MOOCs. The sincere intention of providing education to everyone made me reflect on my own teaching practice. Knowing that 12,524 people expressed interest in learning mathematics, is exciting."

DAVID ROMERO

"It's a new teaching scenario and a new experience where the professor will need to develop new skills and formative capabilities to transfer knowledge, now in a massive form, to a multidisciplinary and multicultural audience in a virtual environment. It's a new instructional design challenge based on a series of strategies and education resources."

What will other
institutions do in 2014?

Georgia Tech

In January 2014, Georgia Tech, in collaboration with Udacity and AT&T, began the first master's degree in Computer Science in MOOC form. The cost per student is $6,600 USD, while the traditional master's program on campus costs $45,000 USD. In October 2013, the university received 2,360 applications in 3 weeks, representing 75% more applications than normal on campus in one year. The first class began with 375 students enrolled, 95% more than a class on campus.

MIT

In March 2014, a group of MIT experts began a MOOC on edX "Tackling the Challenges of Big Data" This course had a cost of $495 USD. Students who met the course requirements would be granted 2.0 CEU (continuing education units). A CEU is not academic credit, however, it is a nation-wide recognized method in the U.S. to quantify the time devoted to professional development and practice in the classroom.

ACE

In March 2014, the American Council on Education announced it will evaluate ten MOOCs given by prestigious universities on Coursera and will make suggestions to others to grant academic credit in their curricula.

MOOC.org

By mid 2014, a project called MOOC.org will be launched. It is an initiative comprised by edX and Google. It will host courses from universities, business institutions, governments and educators who are not part of the edX consortium. The project's objective is to research how students learn, as well as to explore how technology can change teaching within and outside the traditional classroom.

HARVARD Business School

In March 2014, Harvard Business School launched a platform to offer this type of courses. In June 2014, it plans to offer accounting, business analytics and economy courses.

SEP Education TV

In March 2014, Mexico's Public Education Secretariat (SEP), Education TV, was integrated as a member of edX to reach hard to access populations and with greater educational needs in the country.

2011

MIT

edX

In December 2011, the MITx (www.edx.org/xseries) announced its certification program to students at MIT, but also to external students in other education institutions through the edX program.

In November 2013, Sebastian Thrun of UDACITY (www.udacity.com) refocused the MOOCs market toward a continuous education and corporate training market (http://goo.gl/lwJLwz)

2013

U

WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

2014

ENE

In January 2014, the World Economic Forum launched its online training program Forum Academy using the edX platform (www.edx.org/blog/world-economic-forum-launches-forum)

In February 2014, UOPeople (www.uopeople.org/groups/accreditation), the first online university with free enrollment sponsored by the United Nations, offered accreditation of its programs to students from around the world sponsored by the Distance Education and Training Council (DETC).

FEB

UoPeople

BID

COLGATE UNIVERSITY

Smithsonian

OPEN COURSEWARE CONSORTIUM

MAR

In March 2014, the Inter-American Development Bank joined edX platform (www.edx.org/school/idbx). Other corporate universities and organizations are joining this effort such as Colgate University, OpenCourseWare Consortium and the Smithsonian Institution.

RECOMMENDED ACTIONS

Recommendations prepared by the Observatory to explore MOOCs potential:

MOOC

We recommend you enroll in specific courses considering your areas of interest that add value to your teaching subject. This will enable you to get acquainted with the education model and instructional dynamics to take advantage of the best practices.

We suggest you use MOOCs content to design teaching strategies that boost students' learning (for example, to implement hybrid courses and flipped classrooms).
We recommend you take into account the terms of use of copyrighted material for each course, because the absence of licenses in general hinders their use to grant academic credits; plus, we must be consistent in the application of ethics in the responsible use of information and credits of available online resources.

There is an opportunity to foster creative learning by including interactive videos in your course. For example, students may watch a video and do related exercises alternately; the premise is that students learn better when they interact with the learning material.

You could explore teaching strategies that trigger a flexible and interactive learning process, for example, recording classes for future reference. Students may pay their full attention in class and later consult the recordings, avoiding taking notes to focus on paying attention to the teacher, participating and interacting with their classmates.

We recommend you implement text-based assessments and provide immediate feedback. This will enable the student to assess his/her learning and avoid taking their knowledge out of context.

We suggest you implement self-study groups through self-managed learning networks and even foster co-evaluation (cross-evaluation) that allows social and collaborative learning.

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Credits &
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Educational Innovation
Manuel Tamez

Observatory	**Communication**
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