SUCCESS FACTORS IN A MOOC MASSIVE DEVICE : QUESTIONS AND CHALLENGES

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ABSTRACT

Since their appearance and widespread use in 2015, MOOCs, Massive Open Online Courses are considered as a new online learning form powered by technology. The number of these courses (MOOCs) has exceptionally increased in recent years, and the number of the digital platforms that host them has steadily increased. The most known are the following platforms: Coursera, edX, and Udacity in the United States, FutureLearn in the United Kingdom, Iversity in Germany, and the platform FUN (France Université Numérique – Digital University France) in France. Among these platforms, there are those that are public or private and those that are for-profit or not. Given their importance in the democratization of knowledge (free and open to all) and their emergence over the past five years, MOOCs deserve the full attention of the university community: decision-makers, teachers, students, and researchers. In this article, we will examine the online/distance learning concept by presenting a study on MOOCs while describing the founding principles, types, host platforms, advantages, limits, and success factors within a massive device (MOOC). The purpose of this study is to put the light on the questions and issues relating to the MOOC phenomenon in the wave of online training.

Keywords: *Online/Distance Learning, Mooc, Spoc, Higher Education.*

1. INTRODUCTION

Online learning [1], as its name suggests, is an interactive teaching, followed by electronic means (digital platforms) such as a computer.

Whether you are an employee, independent or private, professionals or students, it is possible for everyone to learn from home and acquire new knowledge in order to enrich your resume, develop your general knowledge or simply in order to get an additional training to boost your professional career.

MOOCs, COOCs, and SPOCs are shorts in English in the sphere of Digital Learning, which define online training formats. In this article, we will examine the concept of online/distance learning by presenting one theoretical study on MOOCs that have recently become an essential learning method to follow online/distance training.

The remainder of the article is organized as follows. Section 2 will describe a non-exhaustive overview of the different types of online courses, the operating principle, the target audience for each kind as well as a comparison between them. Section 3 will discuss an overview on MOOCs while describing the principles, the types, the fundamentals, the necessary steps for their creation, the digital platforms in which they take place, the advantages, the limits as well as the success factors within a massive device. Conclusions and perspectives will be presented in the final section of this paper.

2. DIFFERENT TYPES OF ONLINE COURSES

2.1 MOOCs

MOOCs [2] [3], also called Massive Online Open Courses, are online training that is open to all, open access on the Internet and that enable us to learn more about different topics. These are courses proposed by schools and universities for their students. The teachers are filmed and their courses are hosted on digital platforms. These courses are spread over several weeks and provide teaching content with videos, quizzes, and end with obtaining a certificate. A bonus for the CV!

However, there are some limitations: MOOCs target a very large audience that is not necessarily interested in the subject. As a result, only 5 to 10% of participants continue training to the end.

2.2 COOCs

COOCs [4] (Corporate Online Open Courses) are online training proposed by a company for their customers and /or employees on a theme related to its activity or on a subject related to its field of specialization. COOCs are characterized by a mixture of theory and practice.

Concretely, the principle remains the same as the MOOCs. On the other hand, the actors are changing, since it is no longer universities but companies that offer training. Consequently, the target purposes are not quite the same. It is more about developing internal skills, showing team spirit among employees and, in short, developing the company's culture.

2.3 SPOCs

SPOCs [5] (Small Private Online Courses), unlike MOOCs, are aimed at a small number of learners (about thirty to sixty of the participants), previously selected, and propose training on specific topics.

The goal of this kind of online training is to provide a more personalized follow-up than what MOOCs propose. The SPOCs are centered on the practice and the exchanges with the trainer and between the learners as well as on activities reworked face-to-face. Other significant differences compared to MOOCs, SPOCs are often graduating and often paying [6].

SPOCs and COOCs are both business-oriented. The difference between these two formats is the target audience.

2.4 Comparison

Organizations sometimes find it difficult to correctly distinguish different solutions of Digital Learning given the rapid diversification of the different kinds of existing online training. The table below presenting their own features as well as a comparison between MOOCs, COOCs, and SPOCs enables to make the best use of their potentialities.

3. MOOCS : OVERVIEW

MOOCs [7] (Massive Open Online Courses) are the most popular formats of digital courses. These are university-level courses or training that are free and open to all regarding the subscription. On the other hand, the validation of knowledge, which gives rise to the issuing of a certificate is subject to a fee.

Generally, courses are spread over several weeks and provide various teaching content: videos, forums, quizzes, and additional documents. Each learner is free to follow (or not) the training until the end (and thus to obtain a certificate) and to participate (or not) on the forum [8].

Table 1: Comparison between MOOCs, COOCs, and SPOCs

Acronym	MOOCs	COOCs	SPOCs
Definition	Massive Online Open Courses.	Corporate Online Open Courses.	Small Private Online Courses.
Targeted audience	Open to all.	Clients, employees of the company.	A targeted audience of about 30 to 60 participants.
Duration	About 4 weeks (sometimes more), 1 to 2 hours of weekly workload.	From one hour to several days depending on the subject. The workload will then depend on the length of the training.	About 4 weeks (sometimes more), 1 to 3 hours of weekly workload.
Operation	Courses hosted on platforms in multimedia form (video, audio, QCM, etc.) accompanied by accompanying resources necessary for the smooth running of the course (example: videos explain the operation of the course or detailed instructions necessary for the realization of an exercise,…).	Online courses proposed by a company to its customers / employees in order to make them know a corporate culture or acquire / develop new skills.	Online courses in the form of sequences accessible by a small group of learners to then be reworked face-to-face. Also limited in time.
Rate	Free: MOOCs are free and open to everyone.	Free: COOCs are free and open to customers/employees of the company.	Paying: the SPOCs are distinguished by small groups (30 to 60 people) in this the training is not free.
Certification	Do not give certificates or diplomas but there are MOOCs platforms that give certificates (sometimes paying) to people who go to the end of their course.	Reward the best participants with certifications that attest to the validation of all training. These rewards make the training attractive and greatly reduce the dropout rate.	He is a graduate (paid certification). SPOCs limit access for better training of learners as well as for more efficiency.

These courses are offered by schools and universities that often are prestigious (Harvard, MIT, Stanford, HEC, Polytechnique School, etc), and by training platforms.

They cover a wide range of fields from the arts to literature, by way of science, history, economics, computer science, languages, and medicine. Some MOOCs also propose very specific training, particularly in computer science, management, design, etc.

Course participants - teachers and students are geographically dispersed and communicate only via the Internet. Free teaching resources are often used. In the English-speaking world, it can happen that more than 100,000 people are gathered for a course.

3.1 Meaning of the acronym

The term MOOC was used for the first time by Dave Cormier and Bryan Alexander in 2008 to describe an open-access online course offered by the University of Manitoba in Canada [9]. This course, Connectivism and Connective Knowledge, was taught to twenty-five university students and two thousand and three hundred other students who were able to subscribe freely. The four terms of the acronym (Massive Open Online Courses) and their meanings are:

- ✓ **Massive** because there is no limit to the number of participants. Hundreds of thousands of learners can follow the course at the same time;
- ✓ **Open** because courses are available to everyone, as long as you have an Internet connection. There are no criteria of age, place of residence, social status, level of education or work experience;
- ✓ **Online** because courses are entirely online;
- ✓ **Courses** to insist on the fact that these are real courses, with a well-defined program and continuous evaluations

3.2 Principles

A MOOC brings together several principles:

- ✓ A MOOC gathers teachers and students of different levels and geographically dispersed
- ✓ Participants communicate in real time via the Internet, mainly by video conferencing, but also via other tools such as digital workplaces, social networks, blogs, etc.
- ✓ A MOOC can either bring together a large number of participants (hence the term "massive") or a small number of subscribers
- ✓ It relies on the use of free teaching resources: documents, videos, etc.
- ✓ A large majority of MOOCs are short videos posted weekly (no more than ten minutes). There may be several a week
- ✓ Besides the video, the teacher offers a number of resources: books, files, websites that will help you to complete the course by yourself
- ✓ It is organized in sessions, usually over several weeks
- ✓ After each course sequence, you will have access to quizzes in order to practice the lessons of the course and check out that you have integrated the knowledge
- ✓ It includes different activities to evaluate progress. Depending on the case: workshops, group work, homework. You may have written homework to return and exercises to do.

- ✓ It can be a lecture or directed course (by a teacher) or a course whose contents are built by the students
- ✓ All subscribers can go on an open chat forum for the course. This forum is almost as important as the course itself. It enables you to ask your questions, to get help or to help other members of the group, to give your point of view, to share your experiences. In short, you are not alone! There is a real community around each MOOC. The exchanges are always very rich. You will learn as much from forums as by listening to the course.

3.3 Different types of MOOCs

Two kinds of MOOCs can be considered [10] [11]: cMOOCs and xMOOCs.

3.3.1 cMOOCs

cMOOCs [10] [12] (the first generation of MOOCs), with reference to connectivism, focus mainly on blogs and personal readings rather than on homework and exams. In the context of a cMOOC, the teacher is a "facilitator" of the interactions between the participants; the interactions with the teacher are minimal or non-existing, the work is often collaborative. This refers to the notion of horizontal learning. A cMOOC gathers participants with heterogeneous levels, which can complicate the progression of learning. It also requires strong participation. The other particularities of this form of MOOC are:

- ✓ The general objectives of the course are stated by the organizer of the cMOOC: the progression of the course is however not linear because of its participative nature;
- ✓ Consequently, it focuses more on the learning experience than on the accurate acquisition of skills;
- ✓ Each student can contribute and become a "teacher";
- ✓ A cMOOC is entirely based on open teaching resources;
- ✓ Self-evaluation of acquired skills occupies a central place

3.3.2 xMOOCs

The xMOOCs [10] [13], which appeared in 2011, adopted a rather behaviorist and top-down style of teaching. They impart primary importance on homework and exams by putting the emphasis on a more traditional learning approach, often based on short video sequences, accompanied by exercises, with sometimes a peer-to-peer correction (a large

number of subscribers often prohibits a correction by the teacher, even assisted) or a forum for exchange between students. Therefore, we are more in the context of a traditional transmissive pedagogy; activities are then more individual. This refers to the vertical learning notion. The purpose of an xMOOC is to validate skills: the training is then generally accompanied by a success certificate. This form of MOOC requires a great learning autonomy from participants. The other particularities of this form of MOOC are:

- ✓ The teaching pathway is clearly organized in objectives,
- ✓ It mobilizes a large number of participants,
- ✓ It is clearly limited in time,
- ✓ This kind of MOOC can benefit from recognition for initial or continuous training,
- ✓ Evaluation often relies on an automatic notation system

The very first xMOOC is a course on artificial intelligence, offered by Sebastian Thrun and Peter Norvig, teachers at Stanford University [9]. Its success is illustrated by a large number of subscribers, about 160,000 subscribers from more than 190 countries. It gave rise to several digital platforms specialized in MOOC hosting, mostly in the form of xMOOC.

Table 2 below represents a comparison between cMOOCs and xMOOCs according to the Stephen Downes's classification [14].

3.4 Founding principles of MOOCs

3.4.1   Open teaching resources
The idea of open teaching resources is an initiative from Unesco. In order to make popular the access to knowledge in a knowledge-based society, programs related to teaching are introducing information and communication technologies. The MOOC is an open resource. The proposed training is freely available online for anyone who wants it via the Internet. The massive criterion reflects the accessibility of many courses as well as the broad mobilization of an audience [15].

Unlike classical methods of training (face-to-face and e-learning), these teaching resources make possible the course follow-up from anywhere and anytime.

3.4.2   A collaborative community
Web 2.0 tools guarantee the dimension of sharing, exchange, and interaction. The participant involvement in teaching activities is provided by

the MOOC, which combines a set of social media. It is a question of bringing together the work of a heterogeneous and geographically distant audience around a common topic that is essential to the MOOC. The majority of MOOCs proposes a forum service and a communication system. This one offers the opportunity to introduce yourself to the teaching group and other course participants. However, initiatives that include free tools, learning automation, and so-called affinity social networks are multiplying. The MOOC heads toward a platform of group work for a contextualized realization of knowledge [16].

Table 2: Comparison between cMOOCs and xMOOCs

	xMOOC	cMOOC
Teaching model	Classical (traditional approach): Courses - exercises - control of acquired knowledge	Connectivist approach
Knowledge	Prepared before course - declared	Distributed - generated
Coherence	Given by the teacher	Built by the participants
Learning objectives	Defined by the teacher and the program	Defined by each participant for himself
Learn	Follow the course	Navigation, establish connections
Resources	Defined in the course	Aggregated by participants, abundance
Importance of peer-to-peer exchange	Low to medium	Basic
Interactions	Forum on the course website	Distributed from a portal, each participant can use Twitter, his blog …
Synchronization by	Proceedings of the course and instructor	Interactions between participants, theme of the week, meeting point (live video conference)
Learning field	Disciplinary, linked to a university course	Central theme, but open and interdisciplinary
Evaluation of success	Issuing of a success certificate	Self-evaluation of the learning

3.4.3   Scriptwriting of teaching activities
A MOOC is a training session characterized by two elements: a duration and a temporality. The objectives of the training are set by the organization of the learning activities by the teaching teams. Each week, participants have the choice between different teaching themes. Initially, this

management makes it possible to mark up the participant learning pathway. The exploitation of different tools enables the harmonization of teaching and digital. Overall, videos are combined with content on the Internet, and each week, the current module is validated by a quiz [17].

3.5 Necessary steps to create a MOOC

We will see, throughout our analysis, that many questions are raised by the creation of a MOOC. The objectives of the creator, ideals that he promotes, seem to determine strategic choices. All decisions about the format, topic, target audience, etc, depend on these strategies. It is then that emerge methodological guides on how to create a MOOC such as Mathieu Cisel's "MOOC guide" [18], led by France Université Numérique. This reflects both the importance of MOOCs now and the challenges that MOOCs creators may face. According to Mathieu Cisel, here are the steps to create a MOOC:

1. Write the course (and in particular decide the evaluation methods)
2. Break down into work packages (pilot, recruitment and partnerships, design, beta-test, course promotion, management, analysis, and assessment) headed by a competent manager who is available for the duration of the MOOC.
3. Conceptualize the course: organization of the team (which can be done online), design of course material (teaching resources, animation resources that are not essential but give participants the impression that they are not alone but accompanied, accompanying resources that are needed). The importance of the attention to visual and sound quality is noticed, especially for the introductory video.
4. Develop the evaluation mode: application exercises and course **reminding** exercises, test programs, automated evaluation of work (effective but requires a significant initial investment by the teaching team), peer evaluation. The feasibility of these evaluations must first be tested.
5. Write the interactions and define the spaces (importance of formal and informal interactions between participants)
6. Prepare questionnaires on demographics and participant satisfaction
7. Set up the course on the platform; it must be launched as soon as possible, and thus recruit the largest number of participants, and thus fulfill the condition of the M of the word MOOC

8. Test the "beta-test" whose purpose is to detect malfunctions.

3.6 MOOC platforms

The digital platforms that host MOOCs are being developed exponentially [19]: from a dozen in 2011, they increased to more than 4,000 in 2015. This number is steadily increasing. Among the most known, we find the platforms Coursera, edX, and Udacity in the United States, FutureLearn in the United Kingdom, and Iversity in Germany. In France, the platform FUN (France Université Numérique – Digital University France) was created in 2013. These platforms have different goals depending on the countries. In the United States, they have a private for-profit status. Coursera is today the first platform in terms of the number of subscribers and proposed MOOCs. The second most important American platform, edX, is seen as an exception by being a non-profit platform.

The European offer, for its part, has a private for-profit status, except for the French FUN platform, which is public and non-profit. Besides these MOOCs-hosting platforms, many initiatives are enriching the online learning field. Regarding the development of MOOC platforms, offers may be more specialized. Indeed, they are less focused on the university proposal; they have a professional purpose. They use very different digital forms. Indeed, MOOCs represent more the online training, where coexist small companies proposing digital contents of teaching services on a global scale.

These platforms are classified into three categories:

✓ Platforms were directly designed to be MOOCs, and are used by companies or foundations such as Coursera, Udacity, edX, FutureLearn, etc. These platforms are reserved for the most known universities;
✓ Platforms used by companies that initially propose LMSs (Learning Management System, a software that accompanies and manages one learning process or learning pathway) to teaching institutions such as Canvas Network and CourseSites, and which have adapted to go to the "massive" feature. Unlike the previous ones, their strategy is to put MOOCs within the reach of all universities.
✓ Free open source platforms, which must be installed by yourself such as Moodle, Claroline, Sakai, etc.

Here are some features of some most known MOOC platforms. All are differentiated by their status, their operating mode, and their training methods.

3.6.1   Coursera Platform

The American platform, Coursera (www.coursera.org), is a Californian start-up launched in April 2012. It proposes a set of free online courses, in association with many universities and organizations worldwide. Signed contracts indicate that this platform only hosts MOOCs of elite institutions [20].

Institutions that are partners with Coursera have access to an interface enabling them to log onto the platform and include the content of their course. One technical assistance concerning the use of the platform and the interface is also provided. The quality of online courses remains the responsibility of institutions. Thus Coursera doesn't create the proposed courses.

The proposed MOOCs are in the form of lectures, accompanied by a weekly evaluation. They are offered on the basis of the scheduled model that is to say that only a fraction of the content is active at a given moment. Learners can subscribe, even a few weeks after the beginning of courses (but if the homework deadlines are exceeded, they have no hope of getting certification). The fact that thousands of learners are active at the same moment on the platform and on the forums gives an advantage to this model. However, Coursera gets into the model of on-demand course like the Udacity platform. This enables the MOOC proposal to be consistent with the flexibility needs of learners. Access to courses is done without the need to spend money. However, certification, as well as several other services aimed at improving the learner's learning experience, remain with cost.

Currently, with a total of 3023 courses to its credit, Coursera is the largest MOOC platform. These courses concern almost all disciplines and are offered in a large number of languages. Coursera had more than thirty-three million subscribers in June 2018 [21]. The diversity of learners has reflected the diversity of the 174 partner institutions [22].

In addition to the basic offer of free online courses, which can lead to fee-based certification, the platform has invested trade in professional training. Indeed, in January 2014, it launched specialization programs in partnership with large companies such as Google, Instagram or Shazam (cloud, design, cyber-security, entrepreneurship, etc) [23]. Learners can obtain a certificate with a cost at the end of these specializations. The association of these companies with Coursera enables to enjoy a set of talents to which they would not have had access under other conditions. Indeed, almost two-thirds of subscribers on the Coursera platform are people residing out of the United States and one-third are from emerging countries. Their recruitment scope is then expanded by this partnership [24].

3.6.2   Udacity platform

The Udacity platform (www.udacity.com) is another American platform. It emerged from an experiment conducted by Stanford University. In 2012 [25], the university offered a free online course on artificial intelligence. More than 160,000 people from nearly 190 countries have subscribed. With such success, Professor Sebastian Thrun created the first for-profit MOOCs platform. The Udacity platform is currently one of the first to offer professional training in the context of MOOCs. The content of the proposed courses is developed with companies such as Salesforce, Google or Autodesk. Udacity has also partnered with universities. Indeed, in January 2013, it entered into a partnership with the State University of San José for an accredited online offer. In an inverse class logic, this one is only intended for students of San José.

Unlike most web hosting, Udacity offers courses designed in-house by a teaching team employed by the platform. They therefore often have the same format: seven-week courses, with short videos (one to three minutes) accompanied by quizzes, homework to do each week and the last week is dedicated to an excursion (interviews with external experts). Lessons are distributed according to three levels of qualifications: beginner, intermediate, and advanced.

Udacity has another particularity. Indeed, it only offers on-demand courses (self-paced model). MOOCs are always available (no beginning date), which enable learners to follow them at their own pace. However, the disadvantage is the lower number of active students at the same time and teachers with whom to interact on the forums. Access to courses and exercises is free. However, a monthly subscription providing access to projects, teacher feedback, and a certificate is provided for learners.

3.6.3   edX platform

The creation of one common platform offering free online courses, called edX, is announced in May 2012 [26] by the presidents of Harvard University and the Massachusetts Institute of Technology (MIT). This partnership resulted in a non-profit organization led by the two universities, each of them invested $ 30 million in the project.

Only courses of edX members (130 institutions) are hosted on the platform (www.edx.org) [26]. The course model is similar to that one of Udacity platform: short videos with quizzes. Exercises are proposed to learners at the end of each module. The platform proposes both on-demand and scheduled model courses. No money is required to access the courses. Following these courses until the end does not result in the receipt of credits by the students, but it is possible to obtain certificates, some of which require one payment.

EdX is the second most important platform. It had about fourteen million students who followed more than 1,800 online courses in almost all disciplines and in a relatively large number of languages [27].

3.6.4   MiriadaX platform

The first MOOC platform to be launched in Europe is MiriadaX (www.miriadax.net). It was launched in January 2013 in Spain by companies Telefonica and Universia. It represents the main MOOC platform available in Spanish and Portuguese in the world [28].

The platform proposes free hosting of MOOCs of member institutions. It is based on collaborative learning and the free use of teaching resources and technological innovations [29]. The courses are designed and managed by the experts of the universities that propose them. These are lectures accompanied by one evaluation at the end of each module. Like Coursera, they are proposed on the basis of the scheduled model: course content remains available, but evaluations have deadlines. It is no longer possible to request a certification of participation or success after these dates. To automatically get the participation certificate, only 75% of all obligatory activities must be succeeded. The certificate of achievement, on the other hand, requires a full success of obligatory activities included in the course to be requested. It costs forty euros.

Currently, nearly 690 courses are proposed by MiriadaX. These courses involve many disciplines, mainly in technological and economic sciences. But they are taught mainly in Spanish. The platform has 4,071,483 learners [30]. The institutions that form a partnership with Miriadax come mainly from Latin America.

3.6.5   FutureLearn Platform

The FutureLearn platform (www.futurelearn.com), another European (British) platform, is for-profit. The Open University launched it in September 2013 in partnership with eleven other British higher education institutions [31].

FutureLearn offers courses covering a wide range of disciplines. It works with 145 partners from around the world, including many of the best British and international universities, as well as institutions with an impressive archive of cultural and teaching materials. These institutions may be the British Council, the British Library, the British Museum, and the National Film and Television School [32].

All proposed courses are free and in English. Most of them last between six and ten weeks but short courses (two to three weeks) are also provided by the platform. Courses follow the scheduled model with beginning and end dates determined at the beginning. Nevertheless, the platform can resubmit finished courses at a different date. A certificate of participation, which requires a payment (34 pounds), is issued by the platform at the completion of the course. Success certificates, which require money, are also issued but require verification of the learner's identity and that the participant takes the final exam at one of the partner exam centers (Pearson Vue in general).

In order to prepare students for university methods, secondary schools also work with the platform. As part of their teaching (for instance by asking students to follow the MOOCs and then discuss them in class), the teachers also have the possibility of using the courses present on the platform for free, with the written agreement of this one.

3.6.6   Iversity platform

Originally, the German platform, Iversity (www.iversity.org), was a learning platform launched by Jonas Liepmann and Hannes Klöpper in 2008. It was intended to make possible the exchange and online cooperation of work groups from different universities [33].

The platform cooperation is with both professors and universities. It accompanies them in the

creation and the promotion of their MOOCs. Five-to-eight-minutes videos interspersed with quizzes constitute the courses. Regularly, learners undergo evaluations, and the final exam (only some courses are concerned) can take different forms: an exam on the site, online (supervised by online monitoring software) or final projects (dissertation, case study, etc.) Some final exams can be corrected by Iversity's "Cloud Teaching Assistants." They have a good command of the concerned disciplines and can support the instructor.

Iversity [34] offers courses in almost all disciplines, mainly in English and German. The majority of courses are on-demand and are inserted in four pathways:

- ✓ **Audit Track.** Choosing this pathway gives access to all the teaching materials and to evaluations. Learners have the opportunity to participate in discussion forums. All services offered in this pathway are also available in the others. If the requirements determined by the instructor are fulfilled by the participants, they receive a free certificate of participation.
- ✓ **Schüler-Track** (or Certificate Track). This pathway enables recognition of participants' results with a personalized certificate. In order to obtain it, it is necessary to take a supervised online exam with verification of their identity. A certificate of achievement of 49 or 99 euros is received by the learners having succeeded the exams or having submitted a final project. A detailed description of the course contents is provided by an additional certificate.
- ✓ **ECTS-Track.** Universities offering courses on Iversity have the possibility of awarding ECTS (European Credit Transfer and Accumulation System) credits, which are included in the university studies of learners. This ECTS recognition is offered only by the Iversity platform. However, obtaining the certification that awards ECTS credits is only carried out if the participant takes the final exam on the site and pays 49 euros.
- ✓ **Executive Track.** Learners on this pathway don't only have access to online content. Indeed, they can participate in seminars that take place in the institution offering the course. In this way, they can go in-depth into the teaching materials within small workgroups and in collaboration with the teachers of the institution. A certificate can be used to complete the intensive seminars. These ones have a price that varies according to the conditions determined by the instructor.

In addition to these pathways, Iversity offers continuous training by proposing Iversity Pro, a set of professional development courses for individuals and companies. The platform has a range of courses intended for the acquisition of business key skills (management, leadership, marketing and sales, negotiation, etc). This then makes it possible to meet the needs on the market. These courses are designed in collaboration with universities and firms.

3.6.7 FUN platform

The French public national platform, FUN (www.france-universite-numerique-mooc.fr), hosts the online courses of the higher education establishments and research organizations with both initial and continuing training. This platform was launched by the Ministry of Higher Education and Research in October 2013. Its goal was to bring together the MOOCs of French institutions to give them international visibility [35].

On its website [36], FUN is said to be like a guidance aid for students. They can discover new disciplines, self-evaluate or even bring themselves up to date. For companies, the platform represents a resource for continuous training (especially with Small Private Online Courses or SPOC) and an intermediary between higher education, students, and the business world. Universities then have a means of international visibility, teaching reform, and cost optimization.

A network of referents and correspondents has been set up in order to support the institutions in their MOOC project. Quality commitments that describe the standards shared by the MOOC projects hosted by the national platform must also be taken by the institutions. The latter undertake, inter alia, to:

- ✓ Constitute a group of people led by the teacher in charge of the MOOC and having teaching and technical skills
- ✓ Realize teaching objects corresponding to the teaching objectives and the terms of the MOOC project previously drafted
- ✓ Offer services and activities adapted to many participants

A copyright guide is also provided by the platform. It establishes that in the particular case of teacher-researchers, they remain the owners of copyright of their productions.

FUN-MOOC is a Public Interest Group (GIP) co-funded by its members and the ministry since

October 2015. For the moment, this platform only provides "successful follow-up certificates" to participants who have met the requested requirements for MOOCs. Obtaining these certifications is done without spending money and do not qualify for ECTS credits.

The financing for the launch of the platform amounts to 20 million euros, of which 12 million for the Future Investment Programs (FIP) and 8 million provided by the Ministry of Higher Education. Initially, the hosting of MOOCs was free for French higher education institutions. However, the creation of the GIP has brought some changes to the platform: it now offers a MOOC hosting model based on dues of member institutions and proposes a range of services (thematic teaching content) around courses via other portals (in particular, sup-numerique.gouv.fr or the offer of thematic digital universities). Three levels of dues exist:

✓ **Level 1**: the dues amount to 5,000 euros. It enables institutions to upload a certain number of MOOCs per year on the platform

✓ **Level 2**: the dues amount to 20,000 euros. It enables the university to upload an unlimited number of MOOCs on the platform. For each uploaded MOOC, the platform can host two SPOCs (Small Private Online Courses).

✓ **Level 3**: the dues amount to 60,000 euros. The university can upload an unlimited number of MOOCs on the platform but can also upload five SPOCs by MOOC and SPOCs of continuous training proposed to companies.

3.6.8   Moodle

Moodle [37] is an online learning platform, created by Martin Dougiamas, formerly administrator of the WebCT platform at Curtin University in Australia. Its purpose is to help teachers and trainers create and manage online courses based on the interaction and collaborative construction of content.

The first version was published in 2002 [38]. Currently, the Moodle project is coordinated by Moodle HQ, an Australian company of fifty developers funded by a network of 84 Moodle partners, Moodle service companies around the world. In December 2017, more than 93,000 sites in 232 countries have registered their establishment with more than 122 million users [39].

Moodle presents many features: forums, resource manager, tests, and nine key modules ready to use (homework, corrections, surveys, chat, etc.) Several

languages can simultaneously be used in the various courses of the same platform. Detailed usage reports for each learner help supervise their learning efforts through an interface available to trainers, learners, and administrators.

3.6.9   Claroline

Another platform for online learning and open source collaborative work (under GPL license) is the Claroline platform [40]. It works with many resources based on social features such as sharing, the possibility to comment, to like, etc.

Claroline has been designed around and for collaborative work. This collaboration is reflected in many communication tools (messaging, forum, chat, etc.), but also in a sharing system present at all levels of the platform.

Moreover, the platform includes specific tools for collaborative pedagogy that can easily be used for teamwork, peer evaluation or the setting up of a virtual teacher's room for teachers.

Anyone registered on the platform whether a teacher, a student or management staff has his own digital work space. The user can customize this space using widgets: he can create, aggregate, exchange contents with other users.

3.6.10   Ganesha

Ganesha [41] is an online learning platform created by the society ANEMA. It is open source and free. Ganesha is an online learning platform that focuses on individualized pathways. Unlike "content"-oriented platforms (content management system), Ganesha organizes teaching activities and resources around the learner rather than around a course.

Like other online learning platforms, Ganesha has an easier-to-use interface. The trainee, when he connects, can view on his dashboard all the progress of his training:

✓ The training modules of his group;

✓ His login statistics and the messages present on the forum of his group;

✓ The documents relating to his group, the link to his tutor, and his current schedules

✓ All that with a tricolor interface on white background configurable by the trainee, and you get a personalized digital space

3.7 Benefits MOOCs

MOOCs offer different advantages for both learners and organizations (school, institute, university, etc.):

For learners :

- ✓ Active and non-passive learners in their training;
- ✓ More flexibility in time management. MOOCs give learners the possibility to decide when study. They become masters of their training; they can do it at their own pace, and they can take breaks;
- ✓ More flexibility in the use of MOOCs. Learners can follow their training wherever and whenever they wish;
- ✓ More interactions. MOOCs improve interaction with certain kinds of learners. They help shy or reluctant individuals to participate much more in conversations than in a traditional classroom;
- ✓ More autonomy in the way of learning;
- ✓ More pleasant than classroom training (forum, blog, quiz, etc.);
- ✓ Learners can observe their progress through the self-evaluation tools presented by the current and end-of-course MOOCs.

For organizations :

- ✓ Ability to train a large number of people more easily;
- ✓ Lower costs. MOOCs save substantial amounts of money: fewer teachers, fewer books, and less money to spend on classroom rentals. Maybe about fifty percent less expensive than in-class training;
- ✓ Ability to safely simulate dangerous situations or situations with significant consequences;
- ✓ The possibility of modifying the content over the years;
- ✓ No room rental and no travel expenses to pay;
- ✓ Allows for learners' follow-up (marks, progress, etc);
- ✓ Ability to customize the interface according to need.

3.8 Limitations MOOCs

The MOOCs combine two new notions in relation to the classic FOADs (Formations ouvertes et à distance – distance and open learning): "mass" and "opening" [42]. In this particular context, there could be a very large number of registered. However, it is hardly possible to benefit from personalized follow-up or support because of the "mass." As a result, the drop-out rate is very high. Drop-out reasons can be internal:

- ✓ Insufficient intrinsic motivation
- ✓ Low perception of self-efficacy concerning the topic
- ✓ A decline in interest and effort
- ✓ Cognitive overload
- ✓ Ability to register at multiple courses without the ability to follow them
- ✓ Lack of prerequisites
- ✓ Lack of support and follow-up
- ✓ And the feeling of being overwhelmed

3.9 Success factors

The reasons of drop-out regarding the follow-up of MOOCs raise many questions, including the factors that affect the effectiveness of learning in a massive training device as well as the way in which participants manage their learning pathways. The question that also arises is how to teach thousands of learners with very various profiles and without any of the necessary prerequisites for MOOC entry [43]. So many questions can be asked in this context, we present below proposals in the form of hypotheses that must be taken into account in order to increase the follow-up rate and success within a massive system. These :

- ✓ Strategies to learn by yourself;
- ✓ How do learners manage their learning pathway;
- ✓ How can they keep their initial motivation although they are not or very little assisted;
- ✓ The way learners learn in a MOOC;
- ✓ The learning process adopted by participants in a MOOC;
- ✓ How participants build their learning project as the MOOC progresses;
- ✓ What are the elements that favor the building up of this learning project;
- ✓ What is really happening in a MOOC through the use of a participants activity measurement tool, which would help determine the effectiveness of the device.

4. CONCLUSION AND PERSPECTIVE

In this article, a study on MOOCs was presented with the aim of shed light on the issues and challenges that arise: what is a MOOC, what are its kinds, who can or should train with a MOOC, the target audience, how to create a MOOC, what platforms are available to develop and host them, which diploma or certification can be obtained,

what are the founding principles of a MOOC, the advantages, the limits as well as the success factors within a massive device.

MOOCs offer free courses open to everyone. These courses are presented and powered by technology. The platforms that host them are Coursera, edX, Udacity, FutureLearn, Iversity, FUN, etc. These platforms have different goals depending on the country. In the United States, they have a private for-profit status. Coursera is today the first platform in the number of subscribers and proposed MOOCs. The second most important American platform, edX, and the French platform FUN are public and non-profit.

MOOCs arouse great enthusiasm. However, according to their large-scale use in recent years, participants in these courses appear to be experiencing serious problems. This generates a high drop-out rate. The lack of motivation to continue or the lack of support is one of the problems. This is also due to the fact that many courses have been created without taking into account the results of research on learning and self-regulation of learning.

In order to democratize knowledge, MOOCs have one advantage: they make it available to everyone. Thus, they can encourage teachers to involve themselves in a large digital work (preparation of courses/digital teaching activities). An experimental space and an exploration of opportunities (instead of a prescription) are however necessary for such a process. Indeed, the creation and teaching of online courses is tricky and requires a lot of effort. The success of a MOOC or a platform depends on the homogeneity of the team (planners, course creators, designers, teachers, etc.) Each one has its role and performs it synchronously.

Our perspective targets the development of an online training device on IPv6 and the IPv4/IPv6 transition in order to experiment and publish it on a national scale. This work will be a very significant contribution in response to the lack of training in IPv6 on a national and international scale.

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