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Pedagogical Support in MOOCs: A New Approach to Tutoring

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Abstract

This paper analyses tutoring approaches in MOOCs, a new learning and teaching model. To this end, we have undertaken a study of resource materials in order to trace current events. The results indicate how this new learning trend is taking shape both nationally and internationally, and how pedagogical support is being provided in the MOOCs.

Key words: MOOC, higher education, facilitator of learning, pedagogical support, tutoring

Resum

En el present treball s'exposa una anàlisi de l'acció tutorial en una nova modalitat d'ensenyament-aprenentatge, els MOOC. Per a açò, hem dut a terme un estudi de material documental que permet reconstruir els esdeveniments que estan succeint en l'actualitat en els MOOC. Els resultats ens indiquen com es configura aquesta nova tendència d'aprenentatge a nivell internacional i nacional i com s'estableix l'ajuda pedagògica en els MOOC.

Paraules clau: MOOC, educació superior, mediador d'aprenentatge, ajuda pedagògica, tutoria

Resumen

En el presente trabajo se expone un análisis de la acción tutorial en una nueva modalidad de enseñanza-aprendizaje, los MOOC. Para ello, hemos llevado a cabo un estudio de material documental que permite reconstruir los acontecimientos que están sucediendo en la actualidad en los MOOC. Los resultados nos indican cómo se configura esta nueva tendencia de aprendizaje a nivel internacional y nacional y cómo se establece la ayuda pedagógica en los MOOC.

Palabras clave: MOOC, educación superior, facilitador del aprendizaje, ayuda pedagógica, tutoría

1. Introduction

Since the beginning of this century, changes in the manner in which higher education is delivered are forcing European universities to reassess the academic support that they offer to their students. These changes are being shaped by the new knowledge and information society and the concomitant integration of information and communication technologies in education. These two circumstances are paving the way for the educational paradigm of the twenty-first century and creating new trends in teaching and learning.

It is generally accepted that learning is important, but there are different views on its causes, processes and consequences. From the origins of education until the first decade of the twenty-first century, learning has been configured in different ways, in different areas and with different resources; evidently, tutoring has also evolved. A milestone along this evolutionary path has been electronic learning or e-learning.

This concept has the following features: it is a teaching and learning model consisting in the design, execution and evaluation of an educational course or programme; it takes place through networked computers; and it may be defined as education or training offered to individuals who are separate or spread out geographically, or who interact in a timeframe asynchronous to the tutor, by means of information technology and telecommunications resources (Área and Adell, 2009: 391). This learning trend has also resulted in a reformulation of the teaching and learning processes as well as of all the elements that constitute education (teachers, students, tutoring, methodologies, communications systems, etc.).

Sánchez, Mallado and González-Piñal (2013:10) note that the term e-learning was coined a decade ago to refer to educational activities undertaken via, or with the help of, the Internet. E-learning often equates to the simulation of many, highly transferable, elements of the classical learning environment; but education today faces new challenges because of a move towards new learning methods that are more student-centred (Gros, 2011: 18), thereby directly influencing new tutoring models.

Salinas (2005: 3) identifies three basic stages of development in e-learning: a *technological approach* that may be considered as pertaining to the initial period but which, in some cases, continues beyond this period; *content is king* is the second approach, and is predicated on the failure of an excessively technological approach, basing the quality of the process on content and on how the content represents knowledge; and a *methodological approach* that focuses more on the student and that, in line with pedagogical criteria, bases quality on a suitable combination, in each case, of decisions related to the technology to be applied, the pedagogical role to be performed by the environment and the organisational aspects of the process in that environment.

At present, observations and research (Dewaard et al., 2011; Baggaley, 2011; Gros, 2011; Vázquez and Sevillano, 2013) focus on the last of these stages, the implementation of a new student-centred model which, although it has been around since the 1998 Sorbonne Declaration, the 1999 Bologna Declaration and subsequent conventions, is still met with resistance.

This approach is associated with the principle of lifelong learning. Moreover, it would seem to be a necessity if the principle of individual professionalism and competitiveness in a changing, globalised and increasingly technological world is to be guaranteed. This requires an education that is commensurate with context, courses that meet the demands of society and a new way of teaching and learning based on personal and professional skills.

Thus a new educational philosophy has taken root; one that uses technological resources and the Internet as essential *ingredients* for a quality education in today's world. This paper will focus on describing a standout contender in this field, a new learning trend that emerged in 2012 and that has been described by experts as a veritable tsunami (Boxall, 2012; Weissman, 2012) in higher education: MOOCs.

2. MOOCs: massive open online courses

Current higher education models are moving towards a new format that combines three basic principles: free, massive and ubiquitous (Cormier and Siemens, 2010; Berman, 2012; Boxall, 2012). These three principles are taking shape in courses now known by the acronym MOOC (massive open online course) (Vázquez-Cano, 2013). This type of new educational macro scenario, as typified by the MOOCs, responds to the *open learning movement philosophy*, based on four fundamental principles: reuse, revise, remix and redistribute (Cafolla, 2006; OECD, 2007; Bates and Sangra, 2011; Dezuanni and Monroy, 2012). MOOCs have been described as *Direct-to-Student* education by the Council for Higher Education Accreditation (Eaton, 2012; Boxall, 2012; Berman, 2012) and, furthermore, they were considered the most significant educational innovation of 2012 (Khan, 2012). The main reason for this is the way that they have shaken up higher education's hierarchical system. Instead of providing an elite education to a few university students (Harvard, Stanford, etc.) this new educational model offers free and massive courses based on two principles: ubiquity and collaboration among students (Vázquez-Cano, 2013). But what really characterises these new educational models is the appeal of being able to access ongoing education for free, in many cases taught by renowned professors (Fombona et al., 2011; Young, 2012; Vázquez, 2012).

Zapata (2013: 23) underlines the fact that MOOCs are a reality and that they respond to some of the most notable features of emerging society: the possibility of open and unmediated access to knowledge resources through technology. Massive courses are quite simply the next stage in the evolution of open education on the Internet [http://www.mooc.es/que-es-un-mooc/].

The theoretical, methodological, pragmatic foundations on which this novel educational trend is based may be divided into two main types: connectivist or cMOOC, and flagship courses or xMOOCs, which are the repetition of successful courses with materials supplied by highly prestigious researchers (Zapata-Ros, 2013).

Focusing on connectivism, Siemens (2004) argues that it is a theory that supersedes *the three major theories of learning*: behaviourism, cognitivism and constructivism. MOOCs are essentially based on the connectivist theory and its proponent (Siemens, 2005) states that connectivism ... is a theory characterised by its approach to learning as an amplification of (existing) learning, knowledge and understanding through the extension of a personal network. From this concept, where knowledge creation is based on establishing connections, it is clear that the larger the number of nodes, the more possibilities for learning on a particular course. Therefore, the change from closed educational platforms to open learning environments has led to the possibi-

lity of thousands of people around the world signing up to different educational initiatives.

We thus find ourselves in a situation where what matters is the matrix of knowledge: development and knowledge-building processes in groups and in individuals. This gives rise to certain issues (Zapata-Ros, 2013) such as:

- The open nature of the repositories of knowledge (open access) or learning resources (OER, MOOCs, etc.).
- Separating circulation of and access to resources from teaching methodologies.
- Whether knowledge is exclusively produced in individuals, whether it has a group or social aspect or whether it may even be generated in devices.
- Whether the human components of the teaching process – individualised monitoring, pedagogical support, teacher-student interaction, educational assessment, evaluation, etc. – are separable or whether they are essential to the learning process.
- And whether this key aspect of human acquisition – learning and developing knowledge or transferring skills (basic or instrumental, professional or creative) through the individualisation of instructional action – is essential and how this is to be achieved with the help of technology.

Figure 1 shows the constituent elements of the knowledge *matrix* and the assimilation by the individual and the incorporation into operational situations of what a MOOC represents in conceptual terms.

To focus on the subject of this paper, pedagogical support in MOOCs, it is clear from everything published on this subject that with the support of technology the teacher becomes a *facilitator* of learning. This is a significant departure from tradition. An example of this may be seen in this extract from the LAK12 programme (Siemens et al., 2012.):

> "[T]he learning in the course results from the activities you undertake, and will be different for each person. You are NOT expected to read and watch everything. Even we, the facilitators [facilitators is the term that replaces teachers or professors, implicitly omitting functions related to them], cannot do that. Instead, what you should do is PICK AND CHOOSE content that looks interesting to you and is appropriate for you. If it looks too complicated, don't read it. If it looks boring, move on to the next item."

Figure 2. UNEDCOMA (https://campus.fundaciongsr.es/formacion/).

Another example is a UNEDCOMA interactive whiteboard course held in June 2013 [https://campus.fundaciongsr.es/formacion/]: "It is important to note that the forum will not be moderated by us (the teachers); it has been created for your use only, so that you can help one another."

In Figure 2, the professionals in charge of the MOOC highlight in bold that there is no tutor on the course and that pedagogical support and guidance will be given in the forum that all the participants create together.

This makes it quite clear that the role of the teacher in MOOCs, be they an on-site university tutor or distance learning university tutor, takes on different characteristics. Various authors specialising in this field have reflected on how this role is configured in virtual learning environments (VLEs).

Adell (1999) provides a classification of the new role of the teacher in virtual environments and, taking into account the new educational needs of tutoring, calls them facilitators of learning. Collins and Berge (1996) also employ the term.

Gisbert (2002) states that they are learning facilitators because virtual classrooms and technological environments are more focused on learning than on teaching in the classical sense of the word (transmission of information and content). Therefore, they are not transmitters but facilitators of information, resource providers and information gatherers. They facilitate the education of students who think critically and creatively within a collaborative learning environment. They help the student to decide on the best and most appropriate way to achieve their educational goals.

But while most of the authors discussed so far agree on many of the fundamental aspects of what roles teachers should play in virtual learning environments, it is necessary to go further and specify what type of functions are needed

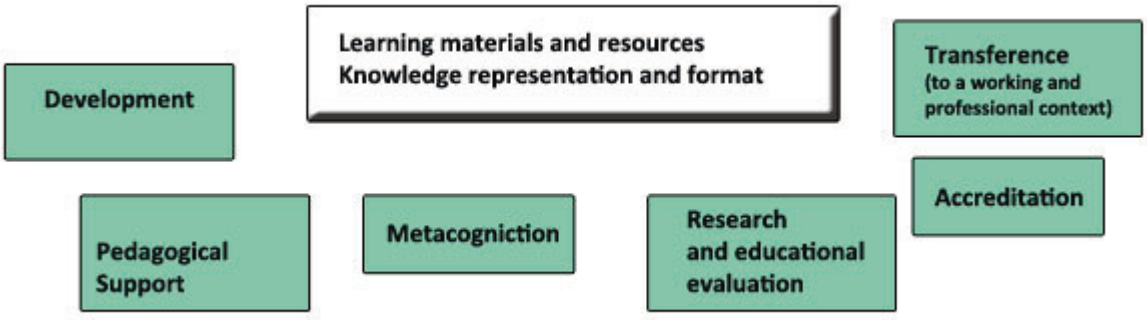

Figure 1. MOOCs (Zapata-Ros, 2013: 26)

in tutoring or *facilitating* an online learning process, specifically in MOOCs.

We therefore believe it appropriate to bear in mind that tutoring is not just *converting* a Word document to a PDF file and uploading it to the Internet, nor is it simply emailing an exercise and marking it, nor, though to a much lesser extent, is it continuing to think that the teacher is the only medium that may ensure the student learns. We may thus view the tutoring function as the guiding relationship of one or more teachers with each student to assist in understanding content, interpreting procedural descriptions, establishing how and when to submit work, exercises or self-assessments, and generally dealing with any individual questions as and when they arise (Padula, 2002, in Valverde and Garrido, 2005).

So planning an online tutorial entails becoming familiar with the functions a virtual teacher-tutor has to perform before designing any kind of online learning activity. Berge (1995) adopts this approach in a first analysis of the different functions of a tutor in a virtual teaching environment. These do not have to be carried out in full by the same person (in fact, they rarely are), and may be grouped into four types, each with their respective recommendations:

- Pedagogical: in which the tutor use questions and explores student responses, focusing discussions on critical concepts, principles and skills.
  Recommendations: sufficiently clear objectives, maintain as much flexibility as you can, encourage participation, do not develop an authoritarian style, be objective and consider the tone of the contribution, promote private conversations, make the material relevant and meaningful, require contributions...
- Social: creating a friendly and social environment in which the learning being promoted is in turn essential for successful tutoring.
  Recommendations: be accepting of non-participating students, be cautious with the use of humour and sarcasm, use introductions, facilitate interactivity...
- Managerial: this function involves setting guidelines on the objectives of the discussion, procedure, decision-making, etc.
  Recommendations: be alert to informality, distribute a list of participants, be responsive, be patient, use private email to urge certain participants to join in the discussion, be clear, devote time to planning...
- Technical: the tutor must ensure that participants are comfortable with the system and software. The main goal of the tutor is to make the technology transparent.
  Recommendations: provide feedback, develop a study guide, provide time to learn, promote peer learning, prevent dropout...

In this conceptualisation of virtual tutoring the teacher takes on the role of learning facilitator. MOOCs are a *disruptive* innovation for which guidance is built into the design of the learning process itself, as it is the students who build their own knowledge with technological support and the various social media tools connecting them with the other participants.

Along these lines, Zapata (2013) proposes the design, construction and development of an open online course with flexible environments ranging from the established massive courses to tutored *Mastery Learning* courses (with a personal tutor, a TA, to assess mastery of the task). The Mastery Learning teaching methodology assumes the existence of TAs, or Teaching Assistants (assistants to the student, not the teacher, although they are coordinated and supervised by and under the responsibility of the teacher), who verify students' progress until they have mastered the task. Here, it should be noted that before organising the course, and especially before the course begins, instructors should determine the functions of the course assistants, for both Mastery Learning students and others.

Two aspects need to be taken into account in the design of the MOOC:

1. On online courses there is only one teacher who occupies the position of instructor. This teacher and their position must outweigh any other in all functions.
2. The stage at which *the teacher has the most influence on learning is in the design phase, during the construction of the course*. More influence than when delivering materials and developing activities.

However, the work of (educational) instructor teachers must be conducted with the participation of all concerned along the four lines of development: knowledge and analysis of existing theories and practical application; creation and execution of teaching and learning activities; use of instructional design techniques; and regulation and self-assessment in feedback through educational evaluation.

With regard to the TAs, when designing the course clear criteria on communicating with students should be established in order to avoid false expectations. Moreover, the instructor teachers who will participate in and bear responsibility for all the educational functions of the subjects must be identified. They are specialists in the field, in resources, organisation, teaching (strategies, activities, objectives and evaluation). These should get to know the students as much as possible and interact with them. Any division of this figure and their responsibility implies a fragmentation of the pedagogical system, with a consequent deterioration of quality.

It must be made clear that the instructor cannot deal with all interactions; the TA will fulfil this function and filter interactions to decide which need to be attended to by the instructor. The instructor must explicitly communicate the role they will play in the activities to the students. They must not create expectations that they will attend to everybody and everything. In addition to communicating this directly, preferably with a video of the instructor, it would be advisable to include it in pleasant and reasonable terms in an opening statement. And of course it must also be included in the course rules.

3. Interaction

Another important element, key to the success of MOOCs and the establishment of pedagogical support, is interaction in the learning process. The new methodology is characterised by new features, and the feature that facilitates learning the most, as widely demonstrated by research (Liu and Shrum, 2002; Berge, 2002; Muirhead, 1999), is the capacity to initiate cognitive mechanisms of representation and acquisition through resources and teaching strategies which are immediate and adapted to the responses and perceptions of the students.

Currently, the use of email between teachers and students or virtual drives, social network groups, forums, group videos, and so on are boosting dialogue, autonomy, self-regulation and reflection. In short, technology is providing ever more opportunities for education to become interactive. This interaction has potentially far-reaching influence, and is leading to teachers changing their role from those who impart knowledge in the classroom or videoconferences, to mediators and facilitators of educational activity. This activity influences teamwork and the production of resources (documents, guides, support materials) that complement the content, activities and evaluation, and which should contain references and indicators of learning progress and which, in any case, should enable them to make decisions on the course of action. This enhances their capacity for intervention and change according to the needs they detect and the signals they observe. Thus, in quality online teaching, the teachers' actions are increasingly characterised by their potential to organise resources (establish spaces, networks, links...) (Zapata-Ros, 2013).

Cabero and Llorente (2007) note that that the advances of recent years have transformed the concept of communication and the ways in which people interact, and this has enabled the Internet to be more than a mere instrument for online learning, offering us the opportunity to interact and communicate easily and efficiently. It thus becomes not only a technological environment, but also a social environment where we exchange ideas, create knowledge and establish relationships on different levels.

Furthermore, when discussing interaction, Maraver, Hernando and Aguaded (2012) refer to a human relationship in which information is exchanged. This relationship may be face-to-face or virtual. To analyse the similarities and differences between the two, we have summarised the work of Gálvez and Tirado (2006) in Table 1.

Considering all these similarities and differences, Cabero and Llorente (2007) stress that the fact that interaction is established virtually does not make it worse than face-to-face interaction; in virtual environments there is a relationship of close communication, as teachers involved in online teaching will attest. Furthermore, they explain that interaction can be established on different levels. For example, it may take place among the students collectively, between the student and the teacher, between an individual student and their peer group. At the same time, the relationship may be direct or inverse, and it may be unidirectional or bidirectional, i.e. it may flow from student to teacher or from teacher to student, and it may or may not be permitted to flow in both directions.

Furthermore, as technology advances the Internet becomes a more social medium because it promotes connection between people and thereby social interaction. Therefore, from an educational point of view this means attention to and ongoing analysis of interactions that occur virtually, because it is from them that we can improve the quality of these new virtual learning environments (Maraver, Hernando and Aguaded, 2012).

Finally, a point worth mentioning is that frequent interaction in the group is a factor that facilitates successful online learning communities (Tirado, Boza and Guzman, 2008) and is therefore a factor that allows us to observe the degree of learning acquisition.

4. MOOCs in the Spanish context

In 2008, George Siemens and Stephen Downes created what may have been the first MOOC: Connectivism and Connective Knowledge (CCK08). Since then, and with the collaboration of Dave Cormier and Bryan Alexander, they have offered a multitude of open courses: CCK09, CCK11, CCK12, Future of Education, PLENK, LAK11, LAK12, Change11, Critical Literacies, among others. Due to the rising popularity of these courses, private initiatives, such as Udacity and Coursera, have appeared on the scene and become great success stories. Edx, the large MOOC platform from the Massachusetts Institute of Technology (MIT), has confirmed the importance of the massive courses trend and reinforced the feeling that this movement is destined to change the face of education, now that the best universities in the world have joined up.

Face-to-face interaction	Interaction in virtual environments
Co-presence of people in space and time.	Time-space co-presence not required.
Technology in the background.	Manifest presence of technology.
Limit on the number of people involved in the interaction.	Open-ended number of people involved in the interaction.
Audience under some control.	Audience indeterminable.
Clear identification of the speaker.	Incomplete identification of the speaker.
The physical-material context is relevant.	The relevant context is that of the simulation.
Predominant interaction is verbal.	Interaction occurs through a set of written texts, images and sounds which establish the parameters of the simulation.
Nonverbal communication is based on gestures, looks, etc., on a different plane to verbal communication.	Nonverbal communication is on the same plane as the verbal.
Stable organisational structure of interaction.	Flexible structural stability (dissipative structure).
Interaction with limited and exclusive communication modes.	Multimodal interaction: may include multiple communication modes and content types.
Physical presence which rapidly objectifies the person.	Screen presence which permits a high level of invention, construction and reconstruction.

Table 1. Differences and similarities between face-to-face and virtual interaction. (Gálvez and Tirado, 2006: 196)

In Spain, Crypt4you [www.criptored.upm.es/crypt4you/portada.html] was the first MOOC initiative in Spanish, run by Doctors Jorge Ramió and Alfonso Muñoz. It was a cryptography course for programmers and was backed by the Technical University of Madrid.

This course has been joined by MiriadaX, a large Spanish-language platform, promoted by Telefónica and Universia (which brings together 1,232 universities from 23 countries in Ibero-America). Other Ibero-American initiatives to run MOOCs in Spanish that have emerged in the last two years are UNEDCOMA, WeduboX, UniMOOC and unX.

UNED (National University of Distance Education), a distance learning university that has been around since the sixties (Menéndez, 2013), stresses that MOOCs are not a fad, but a new method of teaching that is open, massive and online, and that coexists with the traditional model. At the same time, it notes that they constitute an important innovation, since the student is fully involved in their own learning process, as well as the creation and improvement of the course itself. The student is becoming less passive and more active, something that, in one way or another, has already begun to occur throughout the process of the European Higher Education Area. Moreover, it is likely to revolutionise the whole concept of ongoing, lifelong learning, where we teachers will have to rise to the task of introducing more dynamic elements, of casting off the shackles, so that the learning adapts to the needs of the individual and is highly flexible in terms of the tools used. And from the point of view of the teacher, any teacher would be proud to know that what they know, do or research may come to be known by millions of students around the world. Massive Open Online Courses will not radically change formal education, but they will end up influencing the way we teach, helping us to build the university of the future. They will not be an alternative model, but they will be part of an enriching, complementary, dynamic process. They already are.

Tubella (Menéndez, 2013), considers that MOOCs are self-study courses offered regardless of the individual situation as they can have up to 1 million students at a time, which results in an extremely high dropout ratio because there is no personal guidance. Although we obviously cannot say that we will not experience something similar, we focus more on LOOCs (Little Open Online Courses), always monitoring the student, with specialist teachers to ensure the quality of the online teaching.

In the opinion of Albert Sangrà (Menéndez, 2013), who concurs with Tubella, the massification of courses, which is now being sold as an asset, has never been a feature of successful learning. It is very difficult to effectively attend to thousands of students at a time. The high volume of students does not allow for learning to be monitored or for an appropriate assessment system. To date, the news has only focused on how many students start, but not on how many finish. The dropout rate is very, very high, about 95%.

5. Method

We believe that the emergence of MOOCs is no accident but that it was preceded by a decline in university applications and by demographic changes, not only in Spain but also in the United Kingdom and the United States [www.guardian.co.uk/education/2012/jan/30/uk-univeristy-applications-fall], where figures are at levels that are causing public alarm (Zapata-Ros, 2013). Because of the relevant nature of the information, we have concentrated on analysing this new learning trend in higher education, starting, from a general perspective, with tutoring in e-learning. We have also studied how to introduce pedagogical support, a hitherto distorting element in online teaching, to MOOCs. To this end we have designed a preliminary, staggered research programme that will develop as research progresses (Anguera, 2012: 144). This type of non-standard design makes the study more flexible, consistent with the current situation and the data obtained. It provides an infinite number of possibilities which allow us to reconstruct the events as they happen in this educational innovation, since the object of our study is at beta stage.

We deliberately selected our sample with the aim of making the range and scope of the data as wide as possible in order to obtain maximum information from the multiple realities that may be discovered. The instruments used for the selection and collection of information are indirect or non-interactive techniques, i.e. documents (Colás and Buendía, 1998; Anguera, 2012; 146) in both paper and digital form. The documents studied were those that are labelled personal (Colas, 1998: 226-267), those which narrate the subjects' own productions, describing their own actions, experiences and beliefs. Specifically, we selected books, book chapters, articles in academic journals, conference contributions, websites and articles from specialised newspapers. The documentation has been studied in an academic light and subjected to scholarly rigour and has been treated as a functional review that will give us an indication of the issues at stake (Colás and Buendía, 1998: 74). To review these documents we prepared a template for a faster and easier analysis of the information that we describe later. It details the author, year, title, document type, location, year, abstract, important quotes and other information of interest. As for the literature reviewing procedure, we have based this on that described by Crenwell (2002) as cited by Boote and Baile (2005), which consists of five steps and which we have grouped into four: identify key words for the bibliographic search, locate the literature and analyse the most relevant, organise the literature you have selected, and write the review of the literature, i.e. draw up the results.

6. Results

The results of the investigation are summarised below. Although partial results have thus far been presented, comprehensive results may now be presented in summary form.

The state of affairs

Following the advent of e-learning and more than a decade since its inception, a new learning model called MOOC (massive open online course) has arrived on the scene. MOOCs are an international phenomenon whose origins can be traced back to 2002 but it was not until 2008 that George Siemens and Stephen Downes created the first MOOC: "Connectivism and Connective Knowledge (CCK08)". Since then, with the collaboration of Dave Cormier and Bryan Alexander, they have offered a wide range of open courses. Following the success of these courses, enormously successful private initiatives have emerged, such as Udacity and Coursera. When Edx, the large MOOC platform from the Massachusetts Institute of Technology (MIT), was presented, it confirmed and reinforced the feeling that this movement is destined to change the face of education, now that the best universities in the world have joined up.

MOOCs transcend the open learning movement, which is based on four fundamental principles: reuse, revise, remix and redistribute (4R). They are also considered to be the next step in the evolution of open education on the Internet: they are based on the connectivist theory, which was propounded as a theory to supersede the three major learning theories (behaviourism, cognitivism and constructivism), and which is characterised by the fact that it considers learning as an amplification of (existing) learning, knowledge and understanding through the extension of a personal network in which the greater the number of connections between users, the greater the possibilities for learning on the courses, and on the open learning platforms. They have also been described as the most significant educational innovation of 2012 and are based on a new system of free and massive teaching characterised by the ubiquity and collaboration of the students. In this way, a new method of teaching and learning has come about, one which is open, massive and online and which coexists and will continue to coexist alongside the traditional teaching model.

In Spain, the first MOOC initiative was Crypt4you [www.criptored.upm.es/crypt4you/portada.html], run by Doctors Jorge Ramió and Alfonso Muñoz. This initiative began on 15 March 2012 at Criptored, the Thematic Cryptography and Information Security Network, and was backed by the Technical University of Madrid.

Pedagogical support in MOOCs

The conceptualisation of e-learning, in the nineties, had an impact on the structure of teaching and learning processes (content, activities, evaluation, tutoring...) affecting, in particular, the new role of the teacher. This online teaching trend considers the teacher to be the facilitator of learning for the following reasons: virtual classrooms focus more on learning (Adell, 1996; Collins and Berge, 1999); and they are resource providers and information gatherers, educators of students capable of critical analysis and creative thinking within a collaborative learning environment (Gisbert, 2002). Therefore, tutoring is the guiding relationship of one or more teachers with each student to assist in understanding content, interpreting procedural descriptions, establishing how and when to submit work, exercises or self-assessments, and generally dealing with any individual questions as and when they arise (Valverde and Garrido, 2005). So planning an online tutorial entails becoming familiar with the functions a virtual teacher-tutor has to perform before designing any kind of online learning activity. Bearing this in mind, there are four functions (Berge, 1995) that a tutor in a virtual teaching environment must perform, and which do not have to be carried out in full by the same person: pedagogical, social, managerial and technical.

MOOCs are a disruptive innovation for which guidance and pedagogical support are built into the design of the learning process itself, as it is the students who build their own knowledge with technological support and the various social media tools connecting them with the other participants.

It became evident from the earliest MOOC initiatives that the figure of teacher-tutor, supported by technology, becomes a facilitator of learning, but only in the course design. This is a significant departure from traditional models (face-to-face, blended, and e-learning). Proof of this may be found in the LAK12 programme, wherein facilitators is the term that replaces teachers or professors, implicitly omitting functions linked to them and, therefore, it is the students who decide what or what not to do (Siemens et al., 2012). Another example is the UNEDCOMA interactive whiteboard MOOC [https://campus.fundaciongsr.es/formacion/], which calls attention to the fact that the forum will not be moderated by the teachers, but has been created for student use only, so that they may help one another. Now that various MOOCs have been organised over various digital formats worldwide (Coursera, edX, Udacity, MiriadaX, UNEDCOMA, WeduboX, UniMOOC...), it has become clear that there is an issue which is leading to a rethinking of pedagogical support in MOOCs: an extremely high dropout rate due to lack of support (Menéndez, 2013).

In the underlying educational methodology of MOOCs, there is an element that is essential to the success of these courses: interaction. Interaction is achieved through good use of communication tools (social networks, forums...) that encourage student dialogue, autonomy, self-regulation and reflection and thus counters the trend of users dropping out. In this regard, the frequency of interaction amongst the group is a factor that contributes to the success of online learning communities. Likewise, students of this type of course are more active and autonomous in setting their own pace for studying, and the creation and enrichment of the course itself will ultimately depend on them.

These first steps in the evolution of MOOCs have been studied by researchers and teachers who have reached different conclusions. In order to counteract the problem of participant dropout, an alternative teaching methodology has been proposed in the form of tutored Mastery Learning (Zapata, 2013). This type of course entails the design, construction and development of an open online course with flexible environments in which an instructor teacher has a key role to play in the four main areas of the design phase of the course: knowledge and analysis of existing theories and practical application; creation and execution of teaching and learning activities; use of instructional design techniques;

MOOC (Massive Open Online Course)	
International	Appears in 2008 thanks to Siemens and Downes
National	Appears in 2013 thanks to professors Ramió and Muñoz
Transcends	*Open learning movement*
Principles	Reuse, Revise, Remix and Redistribute (4R)
Considered	Open Internet revolution and most important innovation 2012
Features	Open, massive and online
Platforms	Udacity, Coursera, Edx, MiriadaX, UNEDCOMA, WeduboX, UniMOOC, unX...

Table 2. MOOCs.

PEDAGOGICAL SUPPORT IN MOOCs	
TYPES	**PEDAGOGICAL SUPPORT**
cMOOC	Established through the communication nodes that course participants create with their contributions
Tutored Mastery Learning Courses	Instructor Teacher: relevant in the design phase of the course Teaching Assistants: check students' progress up to mastery of task
LOOC (Little Open Online Courses)	Teachers' guidance in the instructional process but with small groups to ensure quality in personalised learning

Table 3. Pedagogical support in MOOCs.

and regulation and self-assessment in feedback through educational evaluation. It also includes a certain number of TAs (teaching assistants), who verify students' progress until they have mastered the task, and whose function is to filter interactions to decide which need to be attended to by the instructor teacher.

Looking ahead to the future, it seems clear that Massive Open Online Courses will not radically change formal education, but they will ultimately influence the way we teach, helping us to build the university of the future. They will not be an alternative model, but they will be part of an enriching, complementary, dynamic process (Menéndez, 2013).

Also now under consideration are LOOCs (Little Open Online Courses) (Tubella and Sangrá, 2013), brought about in response to doubts raised concerning the term massive, which is currently seen as a weakness in the original format that is preventing its consolidation based on the principle of quality in personalised learning.

7. Conclusions

We conclude by noting that the foundations of these teaching systems have been laid but many shortcomings and weaknesses still have to be overcome for a sustainable future in line with with educational principles.

We foresee a future challenge, as envisaged by Vázquez Cano (2013), where MOOCs will need instructor teachers and assistants or content curators (someone who searches for, compiles and shares information continuously), automating and optimising resources but without forgetting that the students themselves must also filter, aggregate and enrich the course with their participation.

All that has been reviewed so far leads us to conclude, concurring with DeWaard et al. (2011) and Baggaley (2011), that this new format still requires a more elaborate pedagogical architecture that actively promotes self-organisation, connectivity, diversity and a decentralised monitoring of the teaching and learning processes. Therefore, these courses have allowed us to trace a line of continuity and adaptability in teaching strategies and pedagogical support in future MOOC initiatives, thus enabling new research proposals.

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