Chapter 3
Digital Platforms, Participation, and Learning Environments Within MOOCs

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3.1 MOOCs: A New Paradigm for Learning

Bosom Nieto and Fernández Recio (2008) state that in recent years there has been a change in the *online* training educational model, incorporating a series of technological tools that offer the possibility of contributing to the production of collective knowledge. According to these authors, knowledge is no longer on the Web, as it used to be in books and libraries, but rather the Web itself has become a source of knowledge and a tool for developing educational content collaboratively. These two researchers argue that MOOCs content and training activities are designed to learn by doing, stimulating the creativity and curiosity of the student in his or her role as an active member. In such a way that each person is the protagonist of their training and transforms the process of listening, viewing, and reading the contents of the course into informal conversations, games, and simulations, which then become tools to build collaborative knowledge.

The new learning paradigm represented by MOOCs in the last decade has been the subject of scientific literature. Aguayo Franco (2017) explains that in recent years different studies have been focused on analyzing scientific production in this learning environment. Among them are the bibliometric studies by, Aguaded,

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Vázquez-Cano, and López Meneses (2016), Mengual-Andrés, Vázquez-Cano, and López Meneses (2017), Sangrà, González-Sanmamed, and Anderson (2015), Zancanaro and Carvalho de Souza (2018); along the same lines, the work of Arnol and Sangrá Morer (2018) on the potential of ICTs in learning is noteworthy. MOOCs have also been the subject of European research projects, such as that of Valle Casanova (2015). As antecedents to this state of the art, there are works that go back to the previous decade, such as Siemens (2005) and Atkins, Seely, and Hammon (2007) among others. However, scientific production has not ceased in recent years as evidenced, for example, in the work of Siemens, Downes, and Cormier (2012), Vinader and Abuín (2013), Cabero, Llorente-Cejudo, and Vázquez-Martínez (2014), Rivera (2014), Castañón and Ziegler (2016), Gértrudix Barrio, Rajas Fernández, and Álvarez García (2017), Ramírez-Donoso, Rojas-Riethmuller, Pérez Sanagustín, Neyem, and Alario-Hoyos (2017), Morado (2018), Osuna-Acedo, Marta-Lazo, and Frau-Meig (2018), Gil Quintana and Martínez Pérez (2018), Roura-Redondo and Osuna-Acedo (2018) and Arnol and Sangrá Morer (2018).

3.1.1 A Virtual Learning Community

MOOCs are conceived as a virtual learning community that is characterized precisely by its collaborative nature. Poy and González-Aguilar (2014) state that this virtual space is defined as a social network that gathers people with common interests, whether at work, in academia, or in any other field. In this learning environment, students can contribute to collective knowledge by sharing ideas that they construct and share based on the responses of other students, through an *online* learning model based on the double interaction between students or between teachers and students. Suárez-Guerrero (2010) argues that, in order to be cooperative, this virtual interaction requires as a necessary condition the existence of a common goal for all participants. From this common goal emanate the needs for joint action technologically mediated by asynchrony. Meanwhile, Raposo-Rivas, Martínez-Figueira, and Sarmiento Campos (2015), based on the theses of Siemens (2005), have shown that cooperation and collaboration activities that are proposed as pedagogical content for this type of training actions have a direct impact on how students perceive and process information, which generates an alternative way of building knowledge.

3.1.2 Culture of Participation and Learning in MOOCs

Roura-Redondo and Osuna-Acedo (2018) claim that the most defining characteristic of our era is a culture of participation. The concept of participatory culture, previously coined by Jenkins (2006), is related to values such as diversity, inclusion, horizontality, democracy, and the relative absence of barriers to any form of civic

expression and commitment. In this sense, a participatory culture would be one in which members feel some degree of social connection or, at least, think that their contributions are significant to others. Roura-Redondo and Osuna-Acedo also point to media convergence, social networks, and virtual platforms as fundamental elements of the knowledge society, as they all generate spaces that facilitate participation, interaction, and collaboration. Both authors consider that digital technologies, as virtual spaces for participation, foster collaborative spaces in which it is possible to collectively build collective intelligence. In a previous contribution by Aparici and Osuna-Acedo (2013), they already realized that the last decade has seen the emergence of collaborative and participatory culture on a global scale. According to these researchers, participation can occur spontaneously—like a tide of ideas, without clear objectives—but it acquires special importance when it has its own identity, intentional degrees of visibility, a reputation and—in addition—can be positioned on the web. It is in this second case, when participation can become a cultural strategy of different social groups to reinvent digital citizen power.

The researcher Gil Quintana (2017), echoing the contributions of Castells (2008), has defined participation as a new communicative model open to horizontality and democratic citizenship that has given way to a type of innovative user who seeks to interact in this great space that is the Network Society, taking part in it and collaborating actively in its construction. This scenario is certainly a fertile ground for the implementation of MOOCs as a learning model.

In general terms, the culture of participation implies horizontal communication models where power relations give people the possibility to exchange viewpoints, to express ideas and comments, and also to work collaboratively. Undoubtedly, Web 2.0, social networks and the remaining ICTs currently constitute an ecosystem that encourages participation and interactivity. It is precisely within this social and technological framework that MOOC learning communities cannot be conceived without taking into account the participation of students and teachers. Nor can they be conceived without taking into account the existence of an effective interactivity between both groups and without a shared vision of collaborative work. From there, it is convenient to look at the dimension of MOOCs as virtual learning communities and to identify their main characters, their interrelationship modes, and the instruments used for the construction of collaborative contents.

3.2 MOOCs: An Evolving Educational Model, Subject to the Technological Impact and Dynamism of Social Media

One of the first educational experiences to be given the name MOOC was the *Connectivism and Connective Knowledge* course, organized in 2008 by Siemens and Downes at the University of Manitoba (Canada). Since then, the dynamism of

this training modality has been permanent, mainly as a result of the evolution of ICT and social networks. Osuna-Acedo et al. (2018) have discussed the constant and dynamic evolution of MOOCs in the last decade. In this sense, they point to the first models called cMOOCs and xMOOCs as antecedents of the current MOOCs. Bernal González, Prendes, and Sánchez Vera (2016) qualify the former as courses based on constructivist models, while the latter is situated within the behavioral model. cMOOCs are based on the connectivist current and seek to stimulate the exchange of information in a joint learning environment where technology-facilitated interaction is fundamental. For their part, xMOOCs tend to reproduce what happens in the classroom and have a pedagogical system that is not far removed from the one normally used by the teacher in a regular face-to-face classroom. These are standardized courses that often lead to certifications supported by educational institutions (Conole, 2013).

These two training models have evolved towards pedagogical formats that enhance student interaction by combining it with the participation model implemented by existing social networks. These are the so-called postMOOCs and sMOOCs. Osuna-Acedo et al. (2018) have pointed out that sMOOCs (*Social Massive Open Online Courses*) introduce a greater degree of social interaction and participation, are accessible from different platforms, and can be integrated into real-life experiences. Parallel to this model, tMOOCs (*Transfer Massive Open Online Course*) are based on the transfer of learning towards a profession, pedagogical transformation, transmediality, open temporality, intercreative talent, and collaborative work and tolerance. Osuna-Acedo et al. claim that, in so doing, a new dimension is reached in this type of courses—the tMOOCs or transferMOOCs—which provide students with the necessary skills to put into practice all the learning tools and methods, as well as peer co-evaluation systems.

3.2.1   MOOC Actors and Main Characters

Today, the Internet and social networks allow everyone who participates in a MOOC to teach others, informally. Now, this teaching model is multidirectional: from student to student, from teacher to student, and from teacher to teacher. Researchers such as Poy and González-Aguilar (2014) and Sosa, López, and Díaz (2014) have referred to the key characters and the role that each of them plays in this virtual teaching model. In relation to the role played, these researchers have identified the course professors and students as the main actors. However, the participation of some representatives of the institution who intervene in logistics, technical support, or in the student's relationship with the MOOC's teaching institution is also fundamental.

3.2.1.1   The New Role of the Teacher in MOOCs

Under the MOOC methodology, teachers have become organizers of the teaching process, coordinating collaborative work and adapting the design of activities to group dynamics. According to Sosa et al. (2014), platform administrators/teachers are responsible for coordinating the course, planning activities, and solving difficulties. Another fundamental mission of the teacher is the supervision of the tools available to achieve student motivation and follow-through.

Recently, Muñiz (2017) interviewed the Director of the UOC's eLearn Center, who expressed his conviction that currently, in MOOCs and in new online training, the teacher should not transmit information because it is already included in manuals, articles, and websites. In the new paradigm, the teacher is a coach who follows each student, helps them in their learning, and evaluates them, not with exams but with tasks that demonstrate their know-how. To such an extent that, now, the teacher has become a coordinator of teams with key competences for the new workplace and social environment, such as entrepreneurship and leadership, as opposed to the old teacher who transferred his or her knowledge to the students. From this same perspective, Marta-Lazo, Frau-Meigs, and Osuna-Acedo (2018) stress the importance of the training of e-professors and the transfer of knowledge from a professional point of view.

3.2.2   MOOC as a Personal Learning Environment

In MOOC, the student's role is fully active and students are partly responsible for their own learning. Sosa et al. (2014) state that their participation and involvement through programmed activities are fundamental. In fact, they maintain that the success of MOOC platforms is conditioned on student participation through contributions in forums, chats, and other collaborative instruments offered by the course platform, in order to be able to build social knowledge through interaction with other users. This creates what Bosom Nieto and Fernández Recio (2008) call a personal learning environment, conceived as a way of using the tools offered by the Internet to self-manage the educational process itself. In this space, the role of the student is active and has the support of all members of the community participating in the training action. In short, learning is now self-directed, as opposed to the old educational system offered by the educational institutions of the twentieth century.

It is difficult to delimit and measure the term *participation.* Dahlgren (2012) has said that it is possible to speak, on the one hand, of interaction for the production and exchange of information and, on the other, of the different degrees of participation intensity. From this perspective, Sánchez Vera and Prendes Espinosa (2014) classify the participating students into three categories, according to their degree of involvement in MOOC courses. Thus, they differentiate between *active participants*, which defines those students who update their blogs and *Twitter* accounts, interacting with other students in the course; *voyeurs,* which includes students who

actively participate in the course but do not follow the members of the group, focusing exclusively on the content and not on other students; finally, they refer to the so-called *passive participants*, who throughout the course did not interact with either the information offered in the course or with other participants in the training process.

3.2.3 *A new Student–School Relationship*

The change in the pedagogical model has also transformed the educational environment and the contents of instruction. Now schools can be everywhere—at school, at home, at work, in places of leisure, etc.—and their contents are multimedia, open, accessible to students and, in many cases, improved and even created by them. In addition, it is necessary to highlight the importance of the work of other collaborators of the educational center—such as the Student Clerk's Office or the Informatics Department, for example—that allow a student-educational institution interaction that makes it possible for the student to feel integrated and have a feeling of belonging to the institution, as opposed to the sensation of being just a number among the participants of a specific MOOC.

3.3 *Open Source* Pedagogical Platforms

There have been several authors who have conducted research on the path followed by technological platforms to become strategic tools for training that allow integrating social and collaborative tools in the technological environment of *Web 2.0* and *Web 3.0*. At the beginning of this decade, Checa García (2010) already gave an account of this journey. Previously, the researcher Boneu (2007) stated that, from a diachronic point of view, the evolution of *e-learning* has been implemented in three technological support models, whose characteristics are determined by the possibilities of collaboration and self-management of contents offered to users. In the first place, this author mentioned the so-called *Content Manager System* or *Course Management System (CMS)* which, among the *e-learning* platforms, are the most basic because they hardly have any collaboration tools among the participants; in the second place, there would be the *Learning Management System (LMS)* which provides an environment that allows the updating, maintenance and expansion of the web in collaboration with many other users; finally, it would be necessary to mention the *Learning Content Management System (LCMS)* which groups together the functionalities and utilities of the two previous ones, adding content management to personalize the resources of each student. The new learning platforms implemented in current MOOCs have been incorporated on this foundation.

Bravo-Agapito, Centellas-Rodrigo, and Aguayo-Sarasa (2018) point out that there are now different types of platforms used in the MOOC environment. The same

applies to Roig-Vila and Lorenzo-Lledó (2017) who, due to their level of implementation and success in the market, highlight the following among others: *edX, Udacity, Coursera, Future-Learn, MiriadaX, and Iversity.* The *EdX* platform, created by the Massachusetts Institute of Technology and Harvard University, offers nearly 2000 courses using the cMOOC methodology; *Udacity,* promoted by Stanford University, has open courses related to research projects; *Coursera,* from Stanford University, collaborates with more than 150 educational institutions around the world; *Future-Learn*, an Open University initiative, offers language courses; *MiriadaX* is a Spanish platform that stemmed from the initiative of Universia and Telefónica Educación Digital that offers courses, mainly in Spanish; and finally, *Iversity,* which is a virtual European platform for hosting and delivering MOOC courses aimed at higher education and business training. According to Gil Quintana (2017), the number of platforms for MOOCs has been increasing at an international level, with the *Redun* platform in Latin America as an example of success.

3.3.1 The Virtual Environment as an Added Value for Learning

The idea that the MOOC model provides certain added values to training actions has been reflected in the scientific literature. Researchers such as Osuna-Acedo et al. (2018) argue that the most relevant characteristics of the so-called tMOOCs are tasks, the transfer of learning towards the profession, pedagogical transformation, the relational factor, transmediality, open temporality, transnationalism, intercreative talent, collaborative work, and tolerance. It is evident that some of them clearly connect with traditional pedagogy, while others—such as the relational factor or tolerance—can be considered as an added value and a sign of identity for this type of teaching.

Along similar lines, Morado (2018) has asserted that the virtual environment created on the platforms used in MOOCs generates the possibility of constructing a learning environment in which people interact with each other, bringing emotions and knowledge into play, while at the same time making it possible to elaborate contents in an active and collaborative manner alongside other students and teachers. In this sense, the researcher highlights a series of aspects that influence the success of these virtual learning environments: interactivity, multidimensionality, the creation of socialization spaces, and the possibility of collaborative, flexible, and multisensory learning.

However, there is criticism of MOOCs in terms of their instructional design and practice because teachers sometimes lack the necessary skills to harness the power of technologies, which sometimes leads to high dropout rates (Conole, 2013). Similarly, researchers such as Gil Quintana and Martínez Pérez (2018) believe that MOOCs continue to present technological difficulties because there is still no clear interest among companies in perfecting the tools of these virtual platforms and

spaces. They point out, in this sense, the need to create a more user-friendly *inter-face* model, similar to that of social networks where millions of users interact every day.

3.4 Collective Knowledge and ICT

The use of virtual environments to develop personal interactions is evidently revolutionizing the educommunicative landscape on a global scale. Today, the technological structures of learning communities are more socially powerful and innovative for networking and more conducive to the creation of learning communities and knowledge networks (Santamaría, 2009; Abdul and Ramírez 2009). Participation on the Web is no longer based on a unitary and uniform dynamic, but it displays different approaches and asymmetries. Thus, *bottom-up* dynamics (collaborative environments, horizontal regime, inclusion, transparency) and *top-down* dynamics linked to institutional practices that sometimes restrict the forms of participation coexist. In this sense, the great change that is taking place in learning communities denotes a shift from a world of decentralized power to one of distributed power where students are the managers and creators of content themselves (Ugarte, 2007a, 2007b). None of this would be possible without the competition between technology and digital convergence.

3.4.1 Tools and Formats for Interaction, Participation, and Collaboration in the MOOC Learning Community

The new educational paradigm of MOOCs is characterized by the omnipresence of digital tools for learning. Scientific literature has reported the emergence of tools and new strategies to improve the learning experience and results in this type of training. These are instruments that have evolved as technology has provided new possibilities for participation and interaction in the courses. Researchers such as Rivera (2014), Sánchez-Acosta and Escribano-Otero (2014), Bernal González et al. (2016), and Vivar et al. (2011) have pointed out some of the most common tools and formats in MOOCs that allow participation, communication, and the collective construction of knowledge. They point out, among others, some of the first ones used in this training format, such as the *portfolio, surveys* and *questionnaires, projects, workshops, tasks* and *activities,* or *anecdotal evidence*. They also mention other second-generation ones, such as discussion forums, blogs and wikis, collaborative games, video games, and specific content for social networks. Finally, we must allude to the gamification-based tools and the latest narrative techniques applied to ICT: machine learning, chatbots, and others mentioned below.

These tools enable collaborative content creation, peer review, and individual and group reflection on learning experiences. In short, they enable users to collaborate intuitively in digital environments and easily access the wide range of knowledge created in these environments and pedagogical formats. This is the case, for example, with the methodology used in the so-called *wiki*. What distinguishes *wiki* from *blogs*, discussion forums, or other content management systems is that there is no inherent coded structure: *wiki* pages can be interconnected and organized as needed, enabling a better construction of collaborative knowledge. Forums are also considered a support and information exchange channel between peers. Along the same lines, *gamification*, video games, virtual worlds, and social networks are tools that help increase student performance and encourage interaction with the teacher and other students (Vivar et al., 2011).

All these tools and formats have evolved over the years. Thus, for example, there has been a shift from instant messaging to remote-access videoconferencing or the creation of mindmaps for the exchange of knowledge (Rivera, 2014). Clearly, the use of some of these resources and tools began with the implementation of Web 2.0 in MOOCs—as in the case of collaborative *wiki*—while others, such as social networks, are tools that emerged starting in 2006—and are therefore relatively recent—although they have evolved in terms of interaction and the format of their contents. As Sotelo (2009) pointed out, *e-learning* brought networking, multidirectional communication flows, and the socialization of knowledge closer to teaching. But technology is advancing and now Web 3.0 contributes, through mobile learning, to give more autonomy to the user and to better adapt to their needs, as Mira-Jiménez (2017) argues.

3.4.2   The Relevant Role of Social Networks in MOOCs

In today's MOOC landscape, the role of networks is particularly relevant. The technology on which they are based allows users to share various types of data and information in multiple formats: audio, text, and video. This feature makes social networks an ideal means of exchanging communication and knowledge.

Unlike traditional unidirectional media, social networks enable a bidirectional dialog in which control is decentralized and open to a large number of users. Within social media, teachers play an important role in guiding productivity to achieve certain goals, activating the network and revolutionizing the learning process. As a consequence, teachers today assume the role of facilitators seeking solutions to problems, rather than maintaining the old role of the teacher authorizing and supplying knowledge.

Authors such as Sánchez-Acosta and Escribano-Otero (2014) have tackled the typology of social networks used for social action in massive *online* courses. Firstly, they mention the strict social networks, which allow any specialization and adapt freely to any type of educational action. Among them they distinguish two types: on the one hand, horizontal social networks, which can accommodate millions of users without a specific theme, as is the case of Facebook; on the other hand, vertical

social networks, more closed and controlled, allowing only people authorized by the administrators to join them, the use of which is one of the strengths of MOOC platforms. Secondly, these authors also refer to the so-called complete social networks, which make it possible to distinguish between groups of friends or followers and control shared content, as is the case with *Google* + and its so-called circles. According to Sánchez-Acosta andEscribano-Otero, the latter is not suitable for MOOCs because it is difficult to control outgoing and incoming information in the course. Finally, these authors mention another social network—with short messages where the information shared is minimal and it is not necessary to add other types of resources—as is the case of *Twitter*.

Social networking sites, such as *Facebook*, facilitate informal communication in a virtual setting where students can work in a cultural participatory community and learn through a process involving their collective intelligence. Its special condition to promote the dissemination of relevant information on a specific topic and to encourage the participation of the members that make up the educational community makes it an ideal tool to consolidate the learning communities created around MOOCs. *Twitter* is also one of the social networks that are available in most courses. Like other social media, this social network enables a very complete conversation, as it allows the insertion of links and a series of other resources that help, among other things, to classify the information through *hashtags* that define the keywords. Due to numerous network planning programs, such as *Hootsuite*, information can be connected to this social network and produce a lot of topics and news in real-time.

3.5   The Path of Transmediality, Virtuality, and Gamification in MOOCs

In scientific literature, authors such as Gértrudix Barrio et al. (2017) are already talking about the importance of incorporating audiovisual, interactive, and *transmedia* content into MOOCs. The same is true for the professional sector, as Sánchez (2018), Director of *Vértice eLearning*, has pointed out. This expert explains that some of the latest trends and tools are undoubtedly improving the participation and effectiveness of online training and therefore of MOOCs. Among them, Sánchez highlights the following:

- *Adaptative Learning.*
- This is a methodology that aims to adapt the instructional material to the student's pace and needs. Tools such as machine learning and chatbots, based on artificial intelligence, are available for this purpose. Its aim is to detect users' needs in order to anticipate and provide effective solutions.
- *Storytelling and gamification*.
  Storytelling is a narrative technique used to create stories and transmit knowledge that connects with the most emotional part of the student. As a complementary trend to storytelling, gamification has become an instrument of internalization of knowledge through play, to generate a positive experience in the student.

- *Virtual Reality.*
  This is a tool that transports the user to a different space where we can interact with all its elements. An environment where the student stops being just a spectator to become part of a new context that offers possibilities to design, create, and share knowledge.
- *Crowdlearning.*
  It is a term used to describe the arrival of instructional tools, such as online videos, *webinars,* or free MOOCs, among others, that promote collaborative work towards achieving specialization through active and dynamic training using *microlearning* or training pills that should not exceed 30 min in length.

The communities that make these digital tools possible in the MOOCs constitute an extraordinary scenario to enrich the *transmedia* approach, by adding new educational realities. Researchers such as Torres Macera and Gago Saldaña (2014) pointed out that its multichannel character is the main feature of the multimedia vision applied to *online* learning.

3.6   Some Considerations for Improving MOOC Participation Procedures

Sánchez Vera and Prendes Espinosa (2014) suggest two aspects that require special attention for the sake of greater MOOC engagement. In this sense, the following points are addressed: firstly, improving the platforms to ensure a better usability; secondly, knowing the type of students that the course has. As the content becomes more specialized, the more homogeneous the group of students and therefore the higher the success rate.

As for Kiberly (2015), in his MOOCs study, he lists some findings that may serve as a reference to improve student follow-up and participation. Specifically, the focus is on two aspects: the certification of courses and their subject matter. It is evident that a certified course can always have the added value of interest to be used as a professional merit of the student; moreover, if the subject is specialized and reinforces the student's competence level, it will also result in a special value for his/her Curriculum Vitae. Finally, Kiberly makes a paradoxical observation: students who opt for courses with certification are more motivated and—this is the paradox—bear the cost and payment of the course with less difficulty.

Finally, it is worth mentioning content improvement. Despite the fact that social spaces in MOOCs are usually available for the student, many of them need help becoming actively involved *online* and demand content created by teachers. It is therefore recommended that, without losing sight of the collaborative learning community, the teacher develop his or her own content proposals. Marta-Lazo et al. (2018) also suggest taking into account the importance of multicultural coexistence and the perspective of tMOOCs as an instrument for social empowerment.

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