INVOLVEMENT OF MOOCS IN THE TEACHING-LEARNING PROCESS

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ABSTRACT

The MOOCs is the century of technological transformations representing a renewal in terms of platforms and educational methodologies through a computer. The current social requirements demand an education that adapts to the needs of people in terms of availability, time, and even lifestyle. These arise as a response to the digital vortex as a training resource in which a series of tools that promote their empowerment is implicit. The objective of this study is to carry out a bibliographic review of the last five years to establish the central interference of the MOOCs, their perspectives, and implications in the process of formation and knowledge. This study is developed in horizons marked by technological transformations and precisely for this reason, nothing is definitive, since digital variations arise every second, thus constituting a limitation due to its speed. It is concluded that the MOOCs allows promoting alternative learning, able to adapt to the users' needs, with some specific thematic axes that include gamification aspects that will enable to dynamize and, therefore to optimize their development.

Keywords: MOOCs, Gamification, Teaching, Education.

INTRODUCTION

The MOOCs come to the digital sphere as an educational proposal that revolutionizes the traditional models of teaching, to create a learning model based on technology and the resources that come from it. The 21st century is characterized by the infinity of Web resources available to strengthen content in countless areas of knowledge, positioning the Massive Open Online Course, as a paradigm shift in pedagogy, educational methods or evaluation available in this new era. In this context, only a literary review will allow the determination of the structure and contribution of these online courses, particularly because of their incidence as diversifiers of education at all levels; this review also becomes a support to deepen in their configuration and how these programs are distributed and segmented at worldwide level. Only the contrast between diverse authors, theories and arguments allows us to face the reality of MOOC courses and determine both their perspectives and the different aspects that this field of knowledge encompasses.

As reported by Aparicio et al., (2019), massive open online courses contribute significantly to individual empowerment, helping people's formation on a wide range of topics. They are directly linked to usage, user satisfaction, along and individual or organizational performance resulting from participation. Lee (2018) even believes that mass open online courses can capture students' learning behaviors in detail without interrupting their learning processes.

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Weinhardt & Sitzmann (2020), state that MOOCs represent an educational approach that allows hundreds of thousands of students to access online courses anywhere in the world and usually for free, and there are a number of stories that suggest that they can revolutionize training and education. For Jung & Lee (2018), massive open online courses represent a way to expand educational opportunities and improve the quality of instruction and learning.

Their essence lies in the sense of immediacy they transmit to a given audience, completely eliminating geographical, cultural or language barriers, which conventionally prevent fluid learning and condition various aspects of the process. The Web 2.0 has as its main characteristic the infinity of information that is updated at every moment, and the MOOCs, take this characteristic as the foundation of their methods to offer the student a variety of topics, but above all a variety of forms referring to how and when to learn.

As stated by Zhuhadar et al., (2015), these courses are becoming an essential source of information for both students and teachers, adapting efficiently to the rapid development of new technologies. Authors such as Margaryan et al., (2015), point out that there are many ways to measure the quality of a course and conventionally, their evaluations are based on the opinions of participants and other key stakeholders linked to the quality of the product. Seema et al., (2020), point out that opportunities should be implemented to improve assessment skills by eliminating standard methodologies and adopting new advanced student-centered teaching approaches. For Handoko & Nusantara (2019), if an online learning-based platform is to increase student interest in using technology for learning, it must pay more attention to factors such as performance, effort, quality of service, and innovation.

Kumar & Kumar (2020) point out that there is enormous research opportunities within this area focused on student satisfaction in continuing with MOOCs; the need to study these factors arises because failure to comply with them ultimately leads to disruption or dropout. According to Wong et al., (2019), to enable learning at their own pace, many activities in MOOCs are asynchronous in nature, with students that watch a series of videos, answer questionnaires, or participate in discussion forums.

Based on this background, an investigation is planned based on a bibliographic review of the last five years focused on three factors within the development of MOOCs as a teaching-learning method: the presence of digital platforms and competencies, innovation processes and future perspectives as educational resources in a technology-mediated environment. The aim of this research is to define the different aspects related to the development of MOOCs and their influence on learning.

METHODOLOGY

For the present work, a qualitative methodology is used, through a review of articles and specialized bibliography on the influence of MOOCs on the teaching-learning processes.

Some parameters are analyzed and reviewed that allows a broader vision of the subject of study: the presence of technological platforms, development of digital skills in MOOCs' students and teachers; innovation processes related to the transformations that this new study method implies and finally, the future perspectives of MOOCs within the educational environment, and as generators of immediate knowledge.

The databases used for the bibliographic review of the last five years have been referred to: Journal Citation Reports (JCR, specifically the Social Sciences Citation Index SSCI), Scopus, ISOC, CSIC and meta-search engines such as Google Scholar, Redalyc & Dialnet.

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With this review, it is intended to counter arguments and define the influence of MOOCs in education and the methods that lead to it, detecting the incidence of digitalization in the relationship between teachers and students, as well as in the feedback that arises here.

RESULTS AND DISCUSSION

Theoretical Research

Presence of Technological Platforms and Digital Competences

Since the emergence of the MOOCs in 2008, the scientific community has focused its interest in them, because of their versatility and the sectors in which they have an impact. These courses are presented as an alternative of flexible education and adapted to the characteristics of today's society, influencing the options offered by universities that, driven by the need to adapt to this new reality, are betting on the design and promotion of these resources for online training, which is favoring the evolution of e-learning (Castaño-Garrido et al., 2015). MOOCs have been defined as:

Online courses designed for a large number of participants, which can be accessed by anyone from anywhere, as long as they have Internet connection, are free for everyone and offer the experience of free online learning (Jansen & Goes-Daniels, 2016).

The use of MOOCs provides students with ubiquitous access to a wide range of resources belonging to "*anytime, anywhere*" environments, as well as sufficient storage capacity for their materials (Arpaci et al., 2020). The instructional design components of MOOCs are statistically significant indicators of student control, sense of progress, and perceived effectiveness (Jung et al., 2019). These resources democratize access to knowledge and training content thanks to their characteristics of free, ubiquity, heterogeneity and their wide possibilities for innovation in instructional models, new architectures of knowledge management and its life-long learning approach, which leads to understanding them as a new pedagogical paradigm (Romero-Rodríguez et al., 2019).

The decision to enroll in a MOOC depends, to a large extent, on how participants assess their pre-existing subject matter knowledge, time availability, digital resources and skills, and self-regulatory capabilities (Zhou, 2016). On the other hand, Paton et al., (2018) explain that mass open online courses stimulated worldwide enthusiasm for a pedagogical model believed to have the potential to revolutionize educational delivery, while authors such as Zheng et al., (2015), identify four types of motivations for enrolling in these courses: meeting current needs, preparing for the future, compensating for some curiosity, and meeting people in their academic field.

When MOOC students register, the system adds a pop-up conversation window to invite students to bookmark the website and, during the learning process, sends regular emails to keep participants updated on their progress (Dai et al., 2020). The transformation in digital spaces, from the static Web to a conglomerate of interactive social networks, blogs, video blogs, online courses (Web 2.0) and immersion in virtual and augmented reality, MOOCs and weareables (Web 3.0), demands that users learn about these new platforms in a self-directed way (Romero-Rodriguez et al., 2016). MOOCs introduce the skills and learning techniques observed in modern scientific research, thus enabling students to gain a foothold in the competitive world (Alhazzani, 2020).

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Innovation Processes

The integration of innovative educational strategies can impact the development and success of a MOOC. Different models of innovation and tools are presented to help adapt the course to the digital world (Valenzuela-Arviszu et al., 2019). There is a need to promote better educational outcomes, teaching innovation and research on teaching and learning; three aspects that make up the idea of MOOC as a key resource to diversify the teaching-learning processes (Ospina-Delgado & Zorio-Grima, 2016). The development of MOOCs and the innovation immersed within them include:

Cooperative Work: Improves the achievement of results and the processes to reach them, assigning each participant an equal load. For Pollack-Ichou (2018), MOOCs rely on technological innovations to expand the scale and scope of education, because a single course can serve tens of thousands of students worldwide.

Integration of Several Disciplines: Several disciplines are combined to improve the skills and capabilities of the participants through the variety of themes and approaches. As stated by Wrigley et al. (2018), the potential benefit of teaching design thinking online is that it facilitates interactivity and collaboration among a multidisciplinary cohort.

Influence of Gamification: Gamification is increasingly employed in learning environments as a way to increase student motivation and subsequent knowledge outcomes; they bring game-playing elements into the classroom without any particular effort (Legaki et al., 2020). "*This discipline is in continuous transformation due to the technological changes we are witnessing today, so we could say that it is alive and constantly updated*" (Gil-Quintana and Ortega-Cabrera, 2018).

Development of skills in different fields: In today's society, with a knowledge-based economy, there is a growing need for people to use creative thinking skills to ensure various advances in different areas of knowledge (Yang et al., 2018).

Diverse Forms of Learning: Van Alten et al., (2020) define it as a process where those involved study the learning material before the class and apply the content of the training material during the class; self-regulated learning behavior is required because of the greater autonomy in this approach to instruction.

Online technologies and platforms have changed the world and the ways of educating oneself, integrating tools that revolutionize pedagogical models with the purpose of helping the user to access a multitude of content in the most practical way possible. Jackson (2019) believes that this digital transformation also encompasses a wide range of technologies such as cloud systems, big data, predictive analytics and integrative platform technologies that have created both opportunities and challenges in today's world.

In this sense and in response to these needs, massive open courses diversify teaching methods, allowing for a variety of topics and, above all, large-scale access for greater inclusion and educational equity. Therefore, there is a greater challenge for teachers, who must prepare adapted digital materials that improve the quality of interaction between teachers and students (Mcgowan & Hanna, 2016). This fact is not ignored in education, because currently the market demands professionals with a comprehensive graduation profile, a special capacity for adaptation and developed skills (Reynosa Navarro et al., 2020).

According to Littenberg-Tobias & Reich (2020), one way MOOC providers adapt to this changing landscape is by working with institutions of higher education to create new

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professional credentials and graduate programs, including those online and combined online/personal programs.

However, one of the problems that are evident in the teaching staff is the scarce knowledge in educational and communication technologies applied to the educational field, causing limitations in the development of the methodologies used in different study programs. For this reason, in some massively open online courses, isolation and lack of peer support is reported suggesting that a lack of coordination and teacher training affects learning outcomes (Zou et al., 2020).

This is what Mor & Warburton (2016) refer to, when they mention in relation to MOOCs that:

Most MOOCs are largely based on videos that are often a mix of talking heads, slideshows and tablet captures. In general, it looks like a traditional cut and paste lecture and is produced without careful thought to the educational effectiveness of this medium.

However, in recent years in particular, the structure of the MOOCs and the continuous updates are beginning to be configured in such a way that they largely cover the needs of students and facilitate, through advances in innovation, the delivery of pedagogies through teachers.

On this, Douglas et al., (2020), mention that the digital educational landscape changed in many ways in recent years, increasing the challenges and opportunities in educational evaluation and validation, to allow professionals and researchers to evaluate students in innovative ways. Precisely, those courses with a high rate of innovation are those that get more followers and diversity of topics, highlighting according to Online Course Report (2020) several courses as the most popular of all times (Table 1).

Table 1
10 MOST POPULAR MOOCS OF ALL TIME

Course	Platform	Institution	Registration
Learning How to Learn: Powerful mental tools to help you master tough subjects	Coursera	UC San Diego	1.192.697
Machine Learning: Master the Fundamentals	Coursera	Stanford University	1.122.031
R Programming	Coursera	Johns Hopkins University	952.414
The Data Scientist's Toolbox	Coursera	Johns Hopkins University	828.837
Think Again: How to Reason and Argue	Coursera	Duke University	775. 717
Algorithms: Part 1	Coursera	Princeton University	751.089
Developing Innovative Ideas for New Companies: the First Step in Entrepreneurship	Coursera	University of Maryland, College Park	736.347
Understanding IELTS: Techniques for English Language Tests	FutureLearn	British Council	690.567
Programming Mobile Applications for Android Handheld Systems - Part 1	Coursera	University of Maryland	678.451
Cryptography I	Coursera	Stanford University	674.404

Source: Course Report (2020).Own Elaboration.

The courses with the greatest impact correspond to universities in the United States and are developed in Coursera (a virtual education platform created in 2011 at Stanford University),

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demonstrating that no institution at the level of Latin America manages to place its respective courses in the top 10 places within the global sphere. About the digital platforms in which the MOOCs are developed, Cantó (2019), selects as the top 10 the following in Table 2:

Table 2 **MAIN PLATFORMS FOR MOOC DEVELOPMENT**	
Formados	Specialized in information and communication technologies, with more than 100 training resources, linked to: *marketing and* digital business; programming, systems and project management
Coursera	Free online courses available from any country in the world. More than 16 million students have already been trained on this platform since its opening.
EdX	It has more than 2,700 online courses from different fields such as business administration, communication, law, design, economics and finance, electronics, computer science, mathematics, environmental sciences, among others.
MiriadaX	Universities and institutions from Latin American countries such as Mexico, Puerto Rico, Dominican Republic, Peru, Colombia and Brazil participate in MiriadaX. The platform is made up of more than 1,000 teachers specialized in the areas taught.
UNED Abierta	Courses in Spanish that are constantly updated with other editions, following the MOOC methodology: open, online, with an unlimited number of registrations and can be taken simultaneously by multiple students.
Future Learn	Platform with categories and topics in the field of education and teaching, as well as topics on psychology and health, business, among others.
AprenderGratis	Educational *e-learning* platform with a very wide catalog made up of more than 1,600 free training resources including courses, tutorials, guides and manuals.
Google Activate	Google training platform that provides free training to improve digital skills, focusing on the world of work and allows you to learn digital techniques and resources.
UniMOOC	Aimed at people with entrepreneurial profiles, with around 80 courses, related to the circular economy and the digital transformation of business.
Tutellus	It offers the Spanish-speaking community online courses in MOOC mode, with the differentiation that the platform the format used to provide information is video training.

Source: Sang, J.C. (2019) Own Elaboration.

It is also important to note that within the MOOCs there are three specific features (general guidelines, use of audiovisuals and development of educational content) that condition both its operation and the impact that these courses have within the educational community. These three components structure the MOOCs and condition their intervention in the community that consumes them. Together, they set up a scenario for their functioning that will depend largely on how the elements are integrated into the training provided and the mastery that both teachers and students who are part of the various online programs have of them.

General guidelines	**Use of audiovisuals**	**Content development**
• MOOCs require prior registration on the platform where they are developed. • Obtaining the final certificate of the course varies depending on the platform, but generally it is 40€. • The duration of the lessons varies between 6	• Audiovisual content is used as a strategy to create engaging courses. • The narrative resources used become a motivation for the student to generate	• The strategies employed are clearly aimed at the academic environment. • The language used is formal, avoiding the incursion of humor or some more informal resource

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and 12 minutes. • There is preference for short videos. • It is allowed to include videos based on expert criteria and interview. • In almost every course there is an introductory video that guides the participant in the courses and in the handling of the tool.	interest in a specific topic. • The video aims to promote participation. • The content must be segmented. • There are MOOC courses with problems in terms of audiovisual clarity. • Many teachers use YouTube videos to build the MOOCs, or presentations as slides or Prezi.	within the classes presented. • To present the content, contextualization is used. • An interaction is induced. • Finally, the evaluation will be carried out with a multiple-choice questionnaire, presented in a simple and practical way.

Source: Own elaboration

MOOC: Future Perspectives

It is complex to talk about trends in digital learning, because of the continuous changes experienced in these areas, although according to Manotas-Salcedo et al., (2019), trends such as OCW (open course ware), connectivity and blended learning are key factors in the development of MOOCs. Another challenge, according to De Barba et al., (2020), is effective time management, since highly autonomous environments such as MOOCs exert additional pressure in this regard.

Technology with a higher degree of innovation must be implemented, and, as Bravo and Escobar (2018) point out, the previous experience of each of the consumers must be taken into account, their sensations (whether positive or negative) must be known and, according to this information, strategic innovation must be thought of. This in order to make a planning that includes, on the one hand, multimedia, and also methodology of easy understanding with the sufficient capacity to transmit content.

The initiative to make MOOCs a trend is in continuous growth and expansion within environments marked by a boom in digital platforms. Gómez-Galán & Pérez-Parras (2017) make a catalog of them:

- cMOOC: Focused on interaction and strengthening of learning based on connectivist theories.
- xMOOC: It relies on traditional and non-connectivist methods.
- tMOOC: A mixture of the two above.

For authors such as Aguaded & Medina-Salguero (2015) it is necessary to consider whether the pedagogical support of these courses guarantees learning. It should also be taken into account that MOOCs should design learning environments, build experiences and facilitate processes.

CONCLUSIONS

The MOOCs are positioned as resources that contribute to online education and contribute to the field of knowledge in a free and open way, with innovation in pedagogical processes and in the curricular structure in different areas of knowledge.

(Al-Rahmi et al., 2019; Foley et al., 2019).

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Traditional and linear education is mutating into an education that encompasses an infinite number of topics, scenarios, structures and configurations to present students with multifunctional content, with sufficient capacity to adapt to different formats. In this sense, MOOCs require constant updating of knowledge by those who teach them, which can also represent a challenge and commitment to continuous improvement, even more so in a context that varies from minute to minute. (Wotto, 2020)

It is evident that the MOOCs with the greatest impact correspond to the United States and are developed within the Cousersa platform, positioned as the leader in this area, in addition to reflecting a permanent collaboration with the best universities in the world and their teachers. Although there are approximately ten digital platforms where these courses operate, Coursera presents the greatest variety of topics, as well as an acceptance of the public, evidenced in the number of individuals registered (Chen et al., 2020; Alturkistani et al., 2020).

The incorporation of the MOOC as innovative strategies allows for the fulfillment of the proposed learning objectives, the feedback and an evaluation with sufficient definition and planning favoring the scope of the proposed challenges and the incursion of technology in a fluid manner, as a resource that functions with the educational content and empowers it (Alhazzani, 2020; Quesada-Pallarès, 2019).

It is proposed as a future line of research to analyze the incidence of MOOCs by geographical areas, specifically by continents, in order to correctly deduce the similarities and differences between them. This will serve to show which are the aspects that condition the success or failure of an online course and which characteristics are attractive for students who decide to enroll in these programs (Tellakat et al., 2019).

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