Innovative university practices on the educational advantages and disadvantages of MOOC Environments

Prácticas universitarias innovadoras sobre las ventajas educativas y desventajas de los entornos MOOC

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Abstract. Information and communication technologies have revolutionized the world as we knew it before its use and applicability to daily life. This use has also moved to the educational field and has transformed the way it is learned and taught today. In the midst of this panorama, Massive Online Open Courses emerge as an opportunity available for everyone to learn, which has caused many changes in the educational field. This study is presented as an investigation into innovative university practices to analyze the advantages and disadvantages of these MOOCs in the Higher Education environment. For this purpose, a qualitative and descriptive methodology has been implemented. The sample consisted of a total of 274 students of the Degree of Social Education of the Faculty of Social Sciences of the Pablo de Olavide University of Seville of the academic courses 2014-2019. Among the main advantages analyzed, we highlight its gratuity, the establishment of collaboration networks and time flexibility, while among the disadvantages we can highlight the abandonment, that some courses are not adapted or available for easy devices or lack of follow-up. The main idea is that once the advantages and disadvantages of MOOCs are known, the former should be encouraged, given the great benefits they entail for education; and in turn try to solve the disadvantages that have been seen that lead to the use of MOOCs, in order to promote the effectiveness of their use.

Key words: advantages; disadvantages; educational innovation; ICTs; MOOCs.

Resumen. Las tecnologías de la información y la comunicación han revolucionado el mundo tal como lo conocíamos antes de su uso y aplicabilidad a la vida diaria. Este uso también se ha trasladado al campo educativo y ha transformado la forma en que se aprende y se enseña hoy. En medio de este panorama, los cursos abiertos masivos en línea emergen como una oportunidad disponible para que todos puedan aprender, lo que ha causado muchos cambios en el campo educativo. Este estudio se presenta como una investigación sobre prácticas universitarias innovadoras para analizar las ventajas y desventajas de estos MOOC en el entorno de la educación superior. Entre las principales ventajas analizadas, destacamos su gratuidad, el establecimiento de redes de colaboración y la flexibilidad horaria, mientras que entre las desventajas podemos destacar el abandono, que algunos cursos no están adaptados o disponibles para dispositivos fáciles o falta de seguimiento. La

idea principal es que una vez que se conocen las ventajas y desventajas de los MOOC, se debe alentar a los primeros, dados los grandes beneficios que conllevan para la educación; y, a su vez, tratar de resolver las desventajas que se han visto que conducen al uso de MOOC, a fin de promover la efectividad de su uso.

Palabras clave: ventajas; desventajas; ambientes educativos; TICs; MOOCs.

1. Introduction

Over the past few decades our society have witnessed a real revolution that, in a dizzying way, has profoundly influenced, modified and transformed the way of life of human beings and characterized by a high generation of knowledge and the constant and fluid processing of information (Gómez-Galán et al., 2017) and the relevance that Information and Communication Technologies (ICT) have assumed, being elements of discrimination and exclusion in many cases in certain social contexts (Cabero-Almenara & Ruiz-Palmero, 2018).

The use of ICTs affects all levels and aspects of our lives daily, and especially what we know and how we learn (Hoadley & Kali, 2019). In addition, ICTs have led to a pedagogical change that encourages and fosters true experiences and activities focused on deeper and interactive learning (Cabero and Barroso, 2018).

If we focus on the framework of action in the 2030 Agenda, the United Nations Organization (UN) points out that children and young people should have flexible skills and competencies that are useful throughout their lives, since the world It needs greater sustainability and interdependence based on knowledge and Information and Communication Technologies (Delors, 1996; Beltrán, 2015; UNESCO, 2016). In this sense, ICTs are considered to be "the new set of tools, supports and channels for the treatment and access to information" (Gonzalez-Soto et al., 1996, p. 413), or as Ortoll (2007) points out as a set of technologies based on microelectronics, information technology and communications networks used to process and transmit information in digital format, which also have a great impact on companies, institutions and on people, thus changing the way we work, learn, live or even communicate (Adell, 1998; Coll & Monereo, 2008.) These influence affects any area of our daily life offering the immediacy of the communicative process such as the elimination of spatial barriers (Sampedro, 2015). ICT integration is generating a constant transformation of our society, becoming one of the most significant agents in social change (Esteve, 2016).

Currently, there is a high connectivity in the society among people, a great display of information and a wide dissemination of knowledge, where sustainability is also promoted (Van den Hoff, 2013). ICT has become a fundamental element of our day-to-day life, thanks to its role as a means of communication and socialization along with all the possibilities it offers in the search for information (Ruíz, Martínez y Perales, 2018). Life nowadays is largely developed in a digital citizenship through the spaces and times built on Web 3.0 (Sandia et al., 2018) and also, as it has been developing in the past and today, This indicates that society is heading towards a Fourth Industrial Revolution, where most of future jobs, and already many current ones, will need digital skills (Williamson, Potter & Eynon, 2019). After seeing all the fields where ICTs can help and in accordance with Agabo (2015), it can be considered that ICTs are not only artifacts that substitute didactic strategies in the educational process, but can be considered as instruments that allow supporting new forms of teaching and learning.

According to Castells (1997), the knowledge, technology, information or network society has the following characteristics: (1) Economic activities are globalized. (2) There is an increase in consumption and therefore the mass production of consumer goods. (3) Mechanical production systems are replaced by electronic and automatic ones. (4) Production relations are modified, both from a social point of view and from a technical position. (5) Development areas for research are selected, normally related to technological impact. (6) Work and work instability become more flexible. (7) New labor sectors appear, such as the one dedicated to information and related to new labor modalities such as teleworking. (8) The creation of a technological infrastructure is promoted and (9) Traditional mass media are globalized, allowing this to break down the barriers of space and time and thus reach long distances and persist over time.

1.1. - MOOCs: virtual environments of social and educational connectivity

It can be said that the technology used in the field of education has meant a set of benefits and potentials with respect to the traditional methods of content transmission (López-Belmonte et al. 2019), these makes easier a better significant learning to be achieved, and makes it posible to attend to the characteristics of each individual (Maquilón, Mirete & Avilés, 2017). Thanks to all this, high indicators of process efficiency are obtained (González, Perdomo & Pascuas, 2017), a greater dynamization of learning (Medellín & Gómez, 2018), a more active and leading role of students (Mingorance, Trujillo, Cáceres & Torres, 2017). In addition to the emergence of emerging technologies, they can prove to be very valuable teaching resources for the construction of knowledge in learning processes, promoting the reformulation of socioconstructivist and research methodologies (López-Meneses, Fernández, Cobos-Sanchiz & Pedrero, 2012). Alva (2015), on the other hand, points out that the digital divide represents a new expression of inequality in the 21st century and implies the marginalization of broad social sectors in the access, use and appropriation of telecommunications goods and services and ICT, which allows people to participate or not in the development of the new society that is built. Therefore, it is very necessary that alternatives that promote the inclusion of ICTs in the educational context are developed, in addition to granting the leading role to students in the teaching and learning process (Froehlich, 2018).

All this information, leads to the idea that that ICTs have a very important role in education, as through technology, anyone can design different training scenarios or sessions through online games, por example, using ICTs, where, due to their ubiquity they can provoke learning in any context, no matter if it this context is formal, non-formal, or informal (Parra-González & Segura-Robles, 2019).

Using ICTs in the teaching and learning processes also foster autonomy among studnets (Parra et al., 2020). For teachers, these technological innovations have many educational possibilities. They allow the promotion and improvement of the teaching and learning processes currently demanded in society (Murillo & Krichesky, 2015). Therefore, teachers must try to effectively integrate technology into learning environments (Kumar & Kumar, 2018). It can be considered that their presence in Higher Education is very important because all professionals who have studied at the university, regardless of the professional area they work on, must have an adequate training for the use of these tools in their professional development and the knowledge for the implementation of any

training activity in the socio-technological environment in which we live (Vázquez-Cano & Sevillano, 2015).

In recent years the university is suffering and generating changes due to different events, ranging from its incorporation to the European Higher Education Area (EHEA), the use of methodologies that promote collaborative work and the incorporation of ICTs and Internet (Almenara & Marín-Díaz, 2014). As a consequence of this, the change to a more active methodology may be the first step towards the beginning of a methodological revolution at these stages (López-Meneses, Llorent-García & Medina-Ferrer, 2017).

Within the legislative framework of the European Digital Agenda, the Action Plan of the Digital Education established in 2018 stands out. This plan focuses on three fundamental priorities that must be addressed (European Commission, 2018: 1) which are:

• Make a better use of digital technology for teaching and learning, reducing the digital divide, promoting teacher training and issuing certificates of digital competence useful for their professional development.

• Develop relevant digital skills and capabilities for digital transformation, creating a common European educational platform, reinforcing open and citizen science, including programming in the curriculum, addressing the challenges of digital transformation and supporting actions aimed at reducing the gap of genre.

• Modernize education through forecasting and better data analysis, generating evidence of ICT assimilation and digital training, launching pilot projects of artificial intelligence and learning analysis in the field of education, developing a strategic prospective on key digital trends in the future of schools.

For all this "new way os education" using tecnologies, teachers must know and bear in mind what their roles are. Gisbert (1999) highlighted the roles and functions of teachers in a technological environment, which are: information consultants (doing materials and resources to search for information, as well as supporting students for accessing to information and they have to be experienced users of technological tools for searching and retrieving information), group collaborators (favoring approaches and problem solving through collaborative work, both in formal and non-formal and informal spaces, for this, it will be necessary to assume new forms of collaborative work taking into account that there will not be to a face-to-face collaboration due to virtual spaces), lonely workers (technology offer more individual implications, as the possibilities of working or teaching/learning from home can lead to loneliness and isolation processes), facilitators (they are learning facilitators, as on virtual classrooms and technological environments the focus is more on learning than on teaching; teachers here are not transmitters of information but facilitators, resource providers, and information seekers. This is also seen as facilitators of the training of critical students, of creative thinking within a collaborative learning environment), course and material developers (as they have a constructivist vision of curriculum development, they also design and develop materials within the curriculum framework in technological environments, they are activity planners in virtual training environments, designers and developers of electronic training materials and finally they favor the change of curricular contents based on advances of the society, technology and the educational process), and academic supervisors (as they can know and diagnose the academic needs of their students, both for their learning and for the overcoming different educational levels, they can help students to select the best training programs based on their personal, academic or professional needs when the need them,

and finally they can monitor and supervise students and give them the feedback they need that will help to improve the different learning activities.

In addition to that, Viñals and Cuenca (2016) propose that the Digital Age teachers must have an attitude of permanent inquiry, they have to promote among their students the learning of skills and they also have to generate learning environments.

In the recent years, one of the most priority objectives for education in developed countries is the use of ICTs in education. This is due to the influence on the improvement of teaching and learning processes through methodological innovation (García-Valcárcel & Tejedor, 2010; Vivanco & Gorostiaga, 2017; Parra-González et al., 2020). In this line, a correct integration of ICTs in the educational field encourages and fosters a better preparation on the one hand of the teaching staff as well as on the other side of the students, taking into account the challenges that society constantly faces (Chikasha, Ntuli, Sundarjee & Chikasha, 2014).

There are several authors (Pedró, 2006; Prensky, 2001) who affirm that the development of the intellectual competences of this generation, in addition to cognitive abilities, are those responsible for transforming the way of thinking and processing information. These authors believe that the new generations are already accustomed to Access to the information primarily from non-print, but digital sources, to give priority to images which are constantly moving and music over text, to feel comfortable performing multiple tasks simultaneously and to gain knowledge by processing discontinuous and non-linear information.

The development of training through ICT has been a major advance in the teaching and learning processes that both teachers and speakers carry out throughout their lives (Marín-Díaz, 2014) and as Martin-Padilla argues (2017), under this socio-technological landscape, the so-called MOOCs shine with their own light.

The term "MOOC" (Massive Open Online Course) was introduced in Canada by Dave Cormirer and Bryan Alexander who used the acronym to designate an online course conducted by George Siemens and Stephen Downes in 2008. The course entitled "Connectivism and Connective Knowledge" was conducted by 25 students who paid their tutorship and obtained their degree, but it was followed for free and without accreditation by 2,300 students and the general public through the Internet. And it is based on directed learning platforms, from the principles of ubiquity, self-evaluation, modularity and video simulation (Vázquez-Cano, López-Meneses & Sarasola, 2013). It is also a relatively recent phenomenon (Graham & Fredenberg, 2015). In 2008, the global phenomenon of MOOCs appeared as an important development of online education (Mackness, Mak & Williams, 2010).

MOOCs are quite interesting current training modalities that allow them to develop in formal and informal educational contexts. Specifically, these courses have been considered as a revolution with great potential in the educational and training world (Bouchard, 2011; Aguaded, Vázquez-Cano, & Sevillano, 2013). These virtual teaching resources represent a transformation in the teaching and learning processes with the use of technology, present an evolution for both learning and distance education (Flynn, 2013; García et al., 2017).

The scientific literature describes MOOCs as virtual environments of social connectivity over an area of study with open didactics (McAuley et al. 2010; Vázquez-Cano, López-Meneses & Barroso, 2015; Aguaded, Vázquez-Cano & López Meneses, 2016). They also amplify access to training by offering learning opportunities regardless of membership in

a particular institution (Durall et al., 2012) and can be a turning point in Higher Education (López-Meneses, 2017). In addition to videos, readings and questionnaires (typical in traditional), MOOCs can make use of interactive user courses that help build a community for students teachers, and teaching assistants (Delgado-Algaba et al., 2019).

The number of MOOC courses has grown exponentially in the few years since they were introduced (Bartolomé & Steffens, 2015) and is the object of didactic and formative reflection between different authors (Zapata, 2013; Ramírez-Fernández, Salmerón & López-Meneses, 2015) and by Higher Education institutions in the globalize world (Haggard, 2013). This means an innovative model of mass education that exploits in a paradigmatic way the potential and relevance of Information and Communication Technologies in society today (Pérez-Parras & Gómez-Galán, 2015).

MOOCs have brought attention in all areas and places, since in addition to offering great potential for learning, they offer free training, which is also of quality and is accessible to anyone, anywhere, only with the condition of having an internet connection, regardless of previous training and without having to pay for that learning (Liyanagunawardena et al., 2013). It is for all this that the Moocs promote the universalization of education and continuous training (Brazuelo & Cacheiro, 2015). All this helps to foster the development and learning of all people in any place, especially that allows to guarantee the education of all citizens who want to learn (Vázquez-Cano & López-Meneses, 2015). As an example to support all this, there is an investigation of the use of MOOCs in emerging and socio-cultural contexts called "MOOC in fragile contexts" that analyzes the experience and difficulties of two refugees who performed a MOOC on the Coursera platform in a field of refugees (Moser-Mercer, 2014). These emerging technologies promote the globalization of knowledge and can revolutionize in an innovative way the educational field as we knew it years ago.

MOOCs displace -some of them "overcome"- the hierarchical relationship between teachers and students, so that the learning process is distributed (hence the references in the MOOC literature to the idea of a "distributed responsibility" in learning), and students also become generators of content and connections between different aspects of the course (Vázquez-Cano & López-Meneses, 2014; Vázquez-Cano, López-Meneses & Barroso, 2015). In this sense, mass and open training poses a challenge for university institutions and the teaching community that must redefine the current methodological paradigm in order to delve into new, more open, interactive, collaborative and ubiquitous, in symbiosis with a more dynamic, holistic and human evaluation embedded in more flexible and diversified curricula adapted to the work ecosystem to promote and facilitate the student the implementation of his own itinerary academic and professional development (López-Meneses, 2017).

In agreement with different authors (Kregor, Padgett & Brown, 2013; Yuan & Powell, 2013; Siemens, 2013; Gómez-Galán, 2014) the following characteristics of MOOCs can be established: they are massive courses, i.e. all students who wish to enrol can participate in them, in principle without restrictions of any kind. They are scalable, not being exceptional those with hundreds or thousands of people. The consideration of massive refers both to the number of students that the course can receive and the impact of it, allowing students, from it, create different subnets depending on their geographical location, language, interest, etc.. They are open because, in the beginning, they are accessible for free. They are available online and all learning activities, contents, communications, etc., take place in a virtual environment. And, of course, they are

courses, since they are structured in a temporary, ordered and sequential way, with a beginning and an end.

Clark (2013) points out the following points when speaking in reference to MOOCs:

• TransferMOOCs: it means that the Moocs transform the electronic learning courses that exist in the Universities through different platforms, imitating a traditional course, where conferences, exams, readings and evaluations can be found.

• MadeMOOCs: this refers to MOOCs incorporating video elements, where the quality of the creation of tasks that students have to do is important, in addition to MOOCs, peer work and co-assessment are enhanced, in addition to the resolution from problems.

• SynchMOOCs: these are courses with closed planning and that have established dates for starting, ending and conducting the evaluations.

• AsynchMOOCs: this refers to courses without completion deadlines, which are also flexible in terms of performing tasks and assessments.

• AdaptiveMOOCs: these MOOCs use algorithms for personalized learning experiences, through dynamic evaluation and data collection of the course.

• GroupMOOCs: these courses are developed for specific and specific groups.

• ConnectivistMOOCS: refers to the courses proposed by Siemens (2012).

• MiniMOOCs; These refer to short courses that have little content and short deadlines for their development.

Today, Higher Education reflects on MOOCs as if they were a revolution of university education (Pappano, 2012; Little, 2013) and it is obvious that its use in the university scientific community can be an increasingly sustainable curriculum option for the expansion of scientific knowledge and university practice in the new massive democratic learning scenarios (León-Urrutia, López-Meneses & Vázquez-Cano, 2017). In addition, as discussed in (López-Meneses, Vázquez-Cano & Román, 2015) there is an upward increase in related scientific articles on this topic worldwide since 2013.

As it has been said, MOOCs are gradually becoming a techno-social trend, especially oriented towards Higher Education for stimulation and learning through university innovation, where new and different scenarios of massive, open and interactive learning are promoted. that can lead to collective and individual research and can help the transformation of classrooms to new forms and ubiquitous, connective, informal, timeless and horizontal learning environments that facilitate the digital inclusion of the most disadvantaged and the inclusion and generation of interactive virtual communities of collective intelligence and knowledge (Vázquez-Cano, López-Meneses & Sarasola, 2013; León-Urrutia et al., 2019).

In short, an MOOC is a way to learn, ideally it is an open, participative, distributed course and a lifelong learning network, it is a way of connection and collaboration, and it is a shared work (Vizoso-Martin, 2013). And as Gértrudix, Rajas & Álvarez (2017) indicate, are being extensively dealt with in academic literature in a journey that goes from bibliometric analyses that measure the representation of the concept in scientific literature and, therefore, its interest as an object of study (López-Meneses, Vázquez-Cano & Román, 2015; Aguaded, Vázquez-Cano & López-Meneses, 2016; León-Urrutia, Vázquez-Cano & López-Meneses, 2017), the institutional policies that stimulate them (Hollands & Tirthali, 2014) or the examination of their pedagogical quality (Roig-Vila, Mengual-Andrés & Suárez-Guerrero, 2014; Aguaded & Medina-Salguero, 2015), among other areas.

2.- Objectives

This research study was structured around the following priority objectives:

– To investigate the perception relative to the strengths of the MOOC courses in the socio-educational fields used by the students of the first year of the subject of Information and Communication Technologies (ICT) in Social Education corresponding to the degree in Social Education in five academic years 2014/15 to 2018/19.

– To analyze the main weaknesses of the MOOC courses from the perspective of the student body of the subject of Information and Communication Technologies (ICT) of the academic years 2014-15 and 2018-19.

– To know and use edublogs as didactic resources in the socio-educational field.

3.- Method

Educational context

A university innovation experience is analysed, based on the perception of 274 students related to the advantages and disadvantages of MOOCs in the social and educational fields corresponding to five academic courses 2014-15 to 2018-19. This university educational action takes place during the month of February in the subject: "Technologies of Information and Communication in Social Education", corresponding to the first year of the degree of Social Education of the Faculty of Social Sciences of the Pablo de Olavide University, of Seville (Spain) with a load of 7.3 ECTS Credits (European Transfer System). With regard to the curriculum, this subject belongs to the didactics and educational organization area and is articulated around various thematic blocks; in our case, it corresponds to the fourth core of content called: "Social/Transversal Themes", specifically Item 8: "MOOCs and their impact on the social and educational field, taking into account in Figure 1 the outline of their content blocks. Its link is: http://bit.ly/2xwjh4x

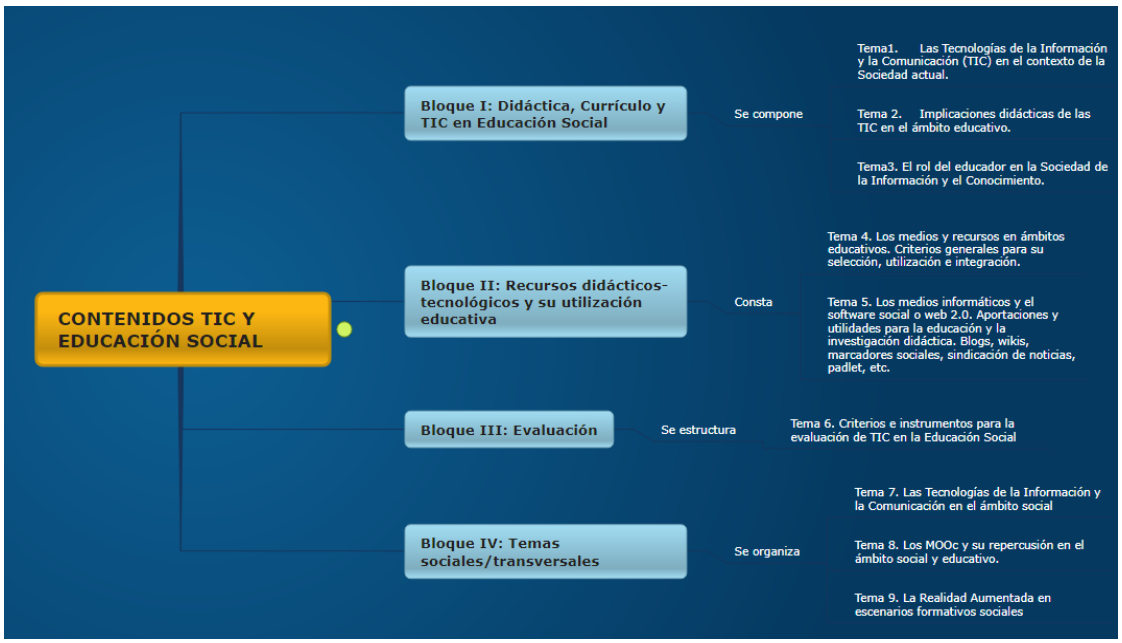

Figure 1. Thematic blocks that make up the subject: "ICT and Social Education".
Source: http://bit.ly/2xwjh4x

The innovative experience suggests that the students on the first grade in Social Education should reflect on the strengths and weaknesses of MOOC courses in the socio-educational fields. In this sense, each student elaborated a personal edublog for the subject about the activities carried out in it, being one of its tabs the MOOC where they had to respond to this reflection, among other aspects. The following is an example of an edublog of a student belonging to the academic year 2018-19 for a better didactic understanding (Figure 2).

Figure 2. Social Education Degree Student (2018-19).
Source: https://ticyeducacionsocialabvc.blogspot.com/p/mooc.html

Method and instruments

The methodology the authors have followed to carry out this research was qualitative and descriptive. The sample consisted of a total of 274 students of the Degree of Social Education of the Faculty of Social Sciences of the Pablo de Olavide University of Seville of the academic courses 2014-2019. In order to analyze the different documents elaborated by the students (comments made in the individual edublog) throughout the didactic experience, we took as a frame of reference the guidelines established by different experts (Bogdan & Biklen, 1992; Miles & Huberman, 1994 & Monje, 2011). In a first phase, data were reduced by categorizing and coding the information obtained. The categorization involved simplifying and selecting the information to make it more manageable. In order to do so, we followed the following steps:

– Separation of units to identify significant segments of information on the reflections formulated on the advantages and weaknesses of MOOC courses in socio-educational fields.
– Identification and classification of the units to group them conceptually in groups that shared the same topic with meaning.
– Synthesis and grouping of the different information units.

During the encoding, each textual unit was identified with its corresponding category through a mixed procedure (inductive-deductive) to proceed to its frequency count and

percentages. The first qualitative phase was analyzed with the participation of two coders who were instructed to independently unitize the textual categories. After a first round of unitizing, inter-coder reliability-measures were calculated. We calculated Guetzkow's U, which measures the reliability of the number of units identified by two independent coders, as follows (Holsti 1969):

$$U = (O1 – O2) / (O1 + O2).$$

O1 represents the number of units identified by coder 1, and O2 the number of units identified by coder 2. After the first unitizing run, Guetzkow's U equaled .0079, showing almost 100% conformance in the number of units identified by the coders. To check textual consistency of the identified units (Weingart et al. 1990), inter-coder unitizing reliability was additionally calculated (compared electronically units of coder 1 and coder 2 using the Excel-program). In our case, textual consistency was as high as 82.12% in the first round, which is considered an excellent result (Simons 1993). Using these main categories and the respective subcategories (total: 13 categories for advantages and 14 for disadvantages), the two coders independently assigned a single code to each unit. After this first main coding round, we calculated Cohen's kappa to check inter-coder reliability. The basic version of Cohen's kappa suggested by Brennan and Prediger (1981) that we used is calculated as follows:

$$\kappa = (\Sigma P_{ii} – \Sigma P_i \times P_i) / (1 – \Sigma P_i \times P_i).$$

ΣP_{ii} is the observed proportion of agreement, and $\Sigma P_i \times P_i$ reflects the chance proportion of agreement (Holsti 1969). To determine the conceptual incisiveness of the categories and to identify potential issues for improvement in the coding scheme, we had to systematically compare the preliminary coding results of the two coders.

4. Results

This section analyses and interprets the 274 assessments formulated by the students of the first year of the Social Education Degree of the five academic years 2014/19. The percentage analysis of the student body contemplates the following strengths of the MOOC courses they have experimented, which are that they find them to be: Free of charge, training aid for the underprivileged, flexible hours, online training and the great variety of courses presented by the MOOC platform. In the background, they consider it positive that they are linked to prestigious universities and that they offer virtual spaces for discussion and collaboration networks to share ideas and educational experiences. Finally, they state that they allow certificates to be obtained and there is no limit on enrolment, and with a lower percentage they state that they can help in the initial and ongoing training of teachers, they offer multimedia materials for teaching and several MOOC courses can be taken at the same time.

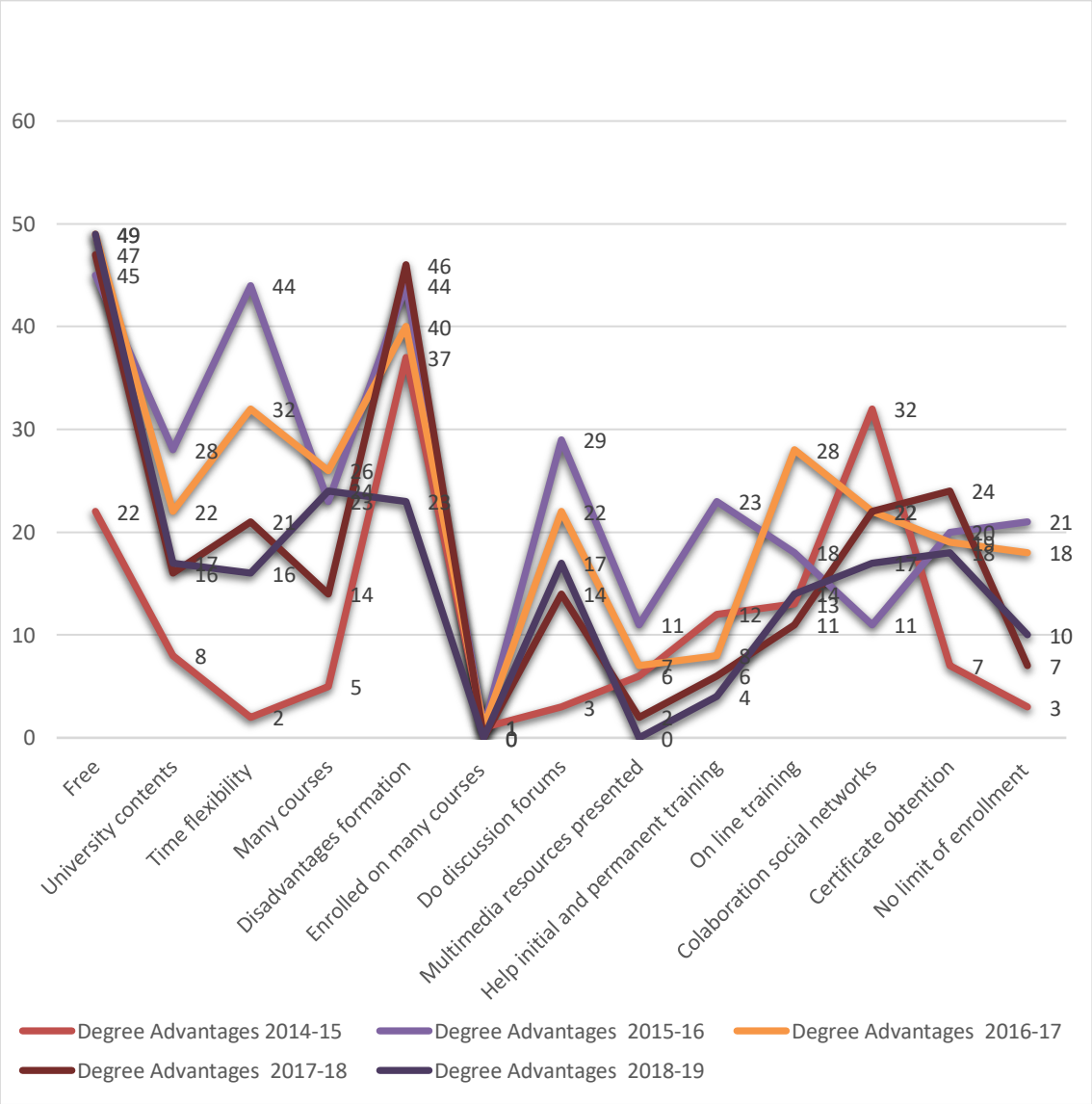

Figure 3. Frequency of responses: advantages of the MOOCs corresponding to the students of the five academic courses 2014/15 and 2018/19

In brief, as the results show, the student body of the five academic courses expresses the main advantages of MOOC courses free of charge. In addition, they offer a sustainable and promising approach to online learning to students worldwide (O'Connor, 2014; Ossiannilsson, Altinay, & Altinay, 2016). The results show that there are different advantages that must be taken into account to improve higher education, such as flexibility, attention to students who do not have enough resources, and collaboration in social networks. These three elements that represent the greatest advantages are linked to three essential elements of transformation that formal higher education should adopt: to link and enrich formal processes with the activity of the student in social networks, to promote a didactics of ubiquity that allows the student from any place and time to be able to learn and connect with other students and finally, this type of teaching is related to the objectives of sustainable development, by favouring access to quality education freely.

Finally, as it was expressed by the students of the five academic courses, in accordance with Vázquez-Cano, López-Meneses and Sarasola (2013) they can help the digital inclusion of groups at risk of exclusion and marginal groups and provide a great diversity of content interesting and high quality as indicated by other authors (Sandeen, 2013, Gillani & Eynon, 2014, Jordan, 2014, Engle et al., 2015). In addition, if these training trends are used to generate both initial and continuous teacher training processes. In this sense, the massive nature of this type of training can mark a before and after in the coverage of teachers' needs, especially in Africa and Asia, which is where it is most needed (Silvia-Peña, 2014).

Once the student's perceptions have been analyzed in accordance with the advantages of MOOC courses, students' opinions related to their weaknesses are shown below.

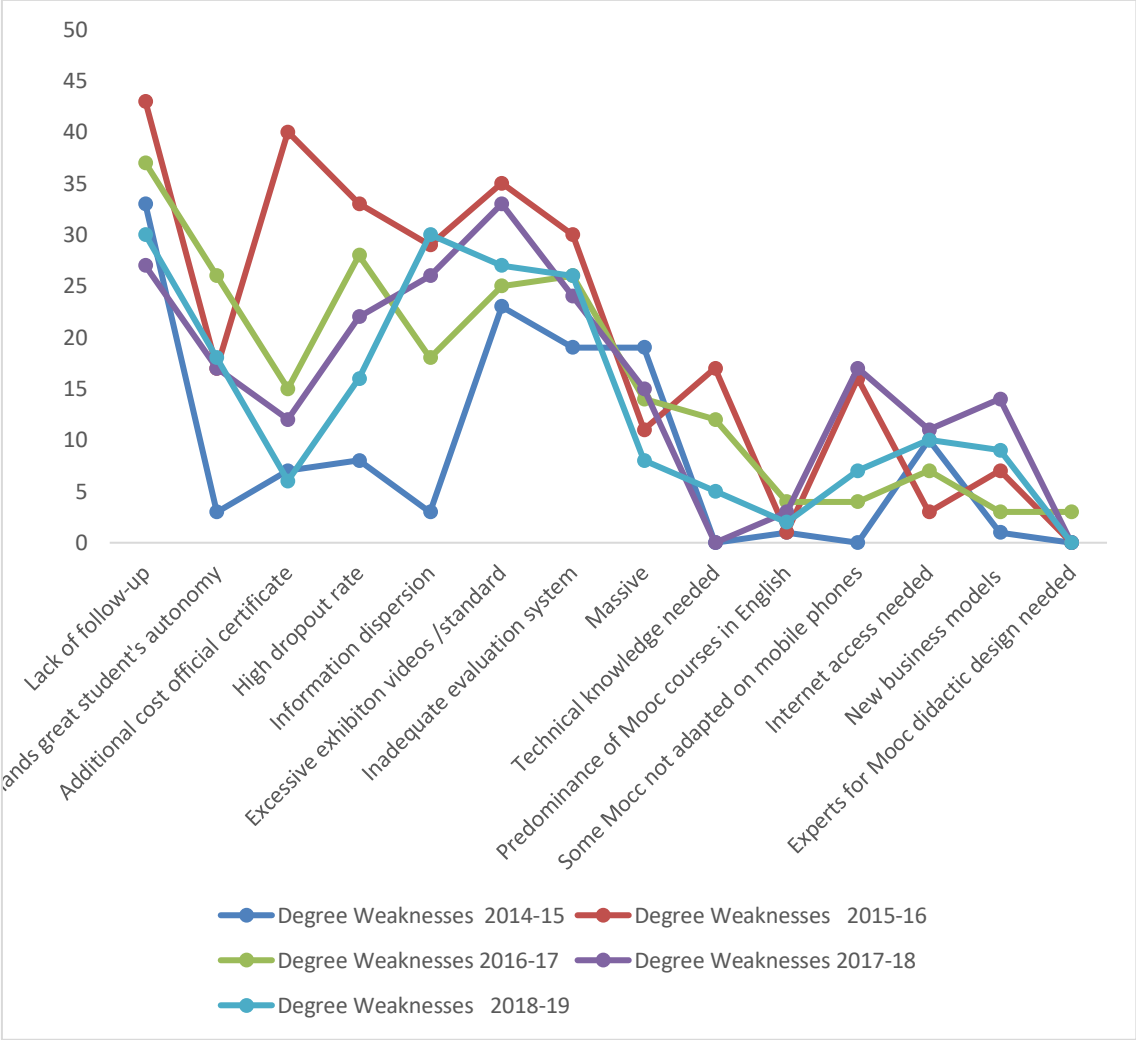

Figure 4. Response frequencies: MOOC weaknesses for the study of the 2015/16 and 2016/17 academic courses. Source: own elaboration

The lack of follow-up, the high drop-out rate, the excessive exhibition videos or that some MOOCs are not adapted on mobile phones, seem to be the disadvantages more important

for students. The MOOCs that emerged as a possible resource to promote connected learning have been moving away from this principle. It should be retaken this conception, the exploration of the theory of self-determination and the theory of personality in connected contexts and massive educational scenarios has profound implications for the expectations of learning online and in open networks; which affects the role of MOOC course coordinators, tutors, teachers and facilitators who face the challenge of combining a pedagogical design that encourages both curricular development and non-academic elements that are considered the most determining elements for self-learning .

5. Discussion and conclusions

Once the advantages and disadvantages of MOOCs are known, the first ones should be encouraged, due to the fantastic characteristics that this implies for learning and the educational world in general for the use of MOOCs in education; and in turn try to solve the disadvantages that have been seen that lead to the use of MOOCs, since once we know them, we could prevent them from occurring, thus promoting only the benefits and making their use stronger and more effective.

Training, research and technological innovation are the backbone for improving the quality and competitiveness of a country, as well as the sustainable development of its citizens. In this sense, Universities are the techno-cultural institutions for the expansion and dissemination of global knowledge, the empowerment of citizens, educational innovation, knowledge transfer and dynamizing professional development, social cohesion and integration in the technological and economic fabric of the Knowledge Society for development and human progress (López-Meneses, 2017).

This new mode of knowledge expansion can help the transformation of classrooms, limited in time and reserved access to information on some occasions to social elite, to transcend new environments of learning ubiquitous, connective, horizontal that can facilitate the digital inclusion of the most disadvantaged and the birth of interactive virtual communities of collective intelligence. But, we must be aware that, after a first period of convulsion and impact on the formative world of Higher Education, it has highlighted a number of deficiencies as the student has expressed and which is corroborated with other authors: the high rate of abandonment, the low interactivity between its participants, the recognition of official training credits, the trend towards monetization, etc. (Aguaded, Vázquez-Cano & Sevillano, 2013; Daniel, Vázquez-Cano and Gisbert, 2015; León-Urrutia, Vázquez-Cano & López-Meneses, 2017).

In the current technological, social and communicative framework, Universities will have to adapt their training processes (the vast majority are doing so) attending, among other aspects, to the characteristics and current needs of students, facilitating the incorporation of flexible and open scenarios for training and learning that help to transform traditional models of communication (characterized by the passivity of students) by others in which they can actively participate in the construction of knowledge and where they are aware of their own training process in the acquisition of skills and abilities (Cabero, Ballesteros & López-Meneses, 2015). In short, we are talking about a new drawing for the university institution, University 2.0 (Cabero & Marín-Díaz, 2011).

Regarding the lines of the future as indicated in another work (López-Meneses, Vázquez-Cano & Fernández-Márquez, 2016), confirms that research of this type allows reflecting

the contents of the subjects and is interesting metacognitive methodological strategies for the development of sustainable competence of the educating.
Finally, let us use these words of the student Belén Franco Ávila corresponding to the academic year 2015/16, who through a post in her edublog was asked as her last task to express the 2.0. most valued application of the subject: ICT and Social Education (figure 5):

I think all the 2.0 applications that we have seen in the practical sessions of the subject are very useful and interesting. I opt for two in the inability to say why I liked it the most, these two applications are, on the one hand MOOC courses, since they have been a great personal breakthrough and because I am interested in doing several courses remotely. Those I found cost money and thanks to them I can do it for free, remotely and approved, thus serving my professional future [...]. Belén Franco Ávila. Degree of Social Education. Course 2015/16.

Figure 5. Student comment.
Source: http://carmenticteando.blogspot.com.es/p/aplicaciones-20.htm

Given the opportunity that a Mooc represents, students should use them with the intention of learning to learn. In addition, it is necessary to facilitate and encourage the involvement of students both in the course of the course, their learning, and in their continuous and final evaluation. This training modality should be extended at an early age to promote the globalization of culture between those ages and equal opportunities before knowledge, and can be a very useful opportunity for vocational training and secondary education. MOOCs when focused on professional skills and language teaching offer great possibilities and a lot of potential. The MOOCs are in a global learning process, where now the educational community has to learn and reach a level of theoretical and practical

competence over the teaching-learning process in a network. This type of network learning, in this massive case, needs new dynamics and skills of the participants in the network. In this sense, it is said that teachers and those who will learn its contents need it. In addition to having a knowledge and mastery of digital competence, we must know and master the applied and didactic use of these digital tools in content creation processes. The authors also believe that there should be, given the importance it is taking, an international body specialized in the evaluation of the quality of MOOCs, to ensure the learning of quality knowledge. Finally, we believe that MOOCs can mean a great and important change in the educational field worldwide, but for this it is crucial that both teachers and students have skills and infrastructure to be able to access and master this type of training that has so many benefits.

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