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Working towards the Sustainable Development Goals: quality digital education during COVID-19

Abstract

The last few years have shown a clear commitment to digital. In the case of the educational field, this new direction is being promoted by global objectives, such as the Sustainable Development Goals (SDG), specific legislation by each country, or technological progress itself. The Massive Open Online Courses (MOOC) can be a good interrelation of all of them, especially in view of the arrival of the pandemic caused by the COVID-19. A digital proposal whose growth during the second decade of the 21st century has been very significant, some reasons to consider are how it favors lifelong learning and both synchronous and asynchronous teaching-learning methods. That is why in this chapter we intend to provide a reflective analysis of the necessary rethinking of education today and what the role of the MOOC can be in this new context.

Keywords: SDG, MOOC, COVID-19, digital proposal, learning.

Training needs in Higher Education

The technological development that has taken place in recent years has had a more than obvious impact on society. From those more repetitive processes to how social relations have changed, it is impossible not to state that new media such as Information and Communication Technologies (ICT) have changed

society, as Carneiro, Toscano, and Díaz[1] already stated more than a decade ago. In these last twenty years, those of the 21st century, practically all areas have been modified to a greater or lesser degree by technological advances. Two very obvious cases are in the economic field, with the appearance of crypto money or mobile banking applications, and in the social field, social networks are a reality that shows the degree of implementation of ICTs, especially in the new generations[2].

What exposes all this is that ICTs have caused a revolution, a change to a new paradigm of constant technological change of which is not final. Since the end of the 00s, in particular, new digital media have appeared whose social internalization has occurred almost instantaneously. The smartphones in Spain, to cite specific data from a European country, are in figures that expose that already exceed three million since last 2019 according to the National Institute of Statistics (INE)[3]. These statistics not only relate the impact of ICTs but also the technological development itself: technology is developed, new technology is assumed, new technology is consumed and technology is developed that surpasses the previous one. In other words, at present technology has a role that goes far beyond facilitating daily life, but is inclined to complement it.

One of the areas in which all of the above can be progressively applied is education. The approaches based on the incorporation of the ICTs have been produced from the world, European or national organizations. From the world structures, the Objectives of Sustainable Development (ODS) promoted by the United Nations should be highlighted, which includes several of them associated with education. We are not going to name all of them but those whose relation to this subject matter. The objective number 4, entitled 'Quality Education', is inevitably not related to the access and use of ICTs in educational contexts in the 21st century. Although it is true that access to education is the main goal, ICTs must also be considered as a tool whose benefit in education can be key not only at present but in an eminently technological future in which knowing how to adapt to the digital can be a necessity.

At the European level, the main project in which education and ICTs are intertwined is Horizon 2020. Its development was planned for six years, from 2014 to 2020, and it is an initiative based on economic investment towards research-oriented to the needs of the future. Although it has not yet been officially implemented, it is already considered a renewal that will last from 2021 to 2027.

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In any case, Horizon 2020 is the top of a mountain oriented towards scientific excellence, industrial leadership, social challenges, promoting participation, and science by and for society. These ideas are translated into a European funding service for those projects that can address any of these issues. Its association with the educational and ICT field, as a social challenge, has already generated direct research or on its bibliographic repercussions[4].

In the national field, the specific example of Spain will be commented on. This is a European country that in 2006, thanks to the Organic Law on Education 8/2006 (LOE), modified and bet on the interrelationship between ICT and education. This legislation included key aspects such as competence development. It represented a significant change with respect to previous approaches, especially with regard to technology, since it incorporated Digital Competence (CD) into the Spanish context. This meant the new direction that the school had to take in relation to ICTs, which were gradually developing and appearing in educational contexts in a more evident way as was the case with presentations or computers. The current legislation, the Organic Law for the Improvement of Educational Quality 8/2013 (LOMCE), maintains the relevance in the teaching-learning processes although as a whole it has a more conservative character.

In this last decade, this approach has been specially translated into the field of educational research. This new conception of learning has meant the elaboration of works that cover from the understanding of these learning indicators[5] to the search for an effective application. One step, that of the effective application, that derives from some key steps as they are the search of the competitive reality[6], the perspectives of the different educational agents[7], or the study of new means[8]. It is complex to be able to group the scientific production developed in these terms since it has been very nourished, in fact, it is interesting to see how 20 years ago the lines of educational-technological research could be grouped in three[9].

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Some of the most repeated, and most striking, results are those related to the CD. This time the great difficulty lies in the fact that it is a complex competence to define and that it is natural based on technological development. The 2011 CD is not the same as that of 2020 nor will it be the same as that of 2030. What it does highlight is that the methodologies supported by ICTs are increasingly present in the classroom, especially in higher education. This implies different reflections, as presented in different studies, which are: the preparation of teachers to effectively apply ICTs[10], especially with students with learning difficulties[11] and teachers in training[12], the role of ICTs in education and the digital age[13] or evaluation[14].

The last decade has shown that ICTs, supported by initiatives ranging from national to global, are increasingly considered to accompany and even replace some teaching-learning processes. Two obvious repercussions of this are that the training of teachers and future teachers must be consistent; it is not possible to apply an unknown ICT. The CD, in view of the technological development, is going to be very complex to define forever, but there is the possibility of betting on lifelong learning to achieve greater functionality of ICTs incorporated into education. The students change, the teachers change and the means change, however, this does not imply resorting to future utopian approaches and avoiding betting on the present.

The Role of MOOCs in the 21st century Higher Education

The Covid-19 has meant a drastic spatial rupture in terms of the educational process. The impossibility of carrying out the teaching-learning processes in a physical way has implied a rapid rethinking of the technological state and education. Confinement, especially in European countries, has forced adaptation

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towards teaching that can only be developed digitally. This fact has led to different questions: how to readapt the educational system[15], how to teach without teaching in physical spaces[16], what methodologies can be developed through digital media[17], and what technological resources can be used in a practical and functional way[18]. A new global paradigm that, especially in the case of education has meant adapting to a new paradigm organized on the basis of non-presence or semi-presence.

One of the educational fields most historically linked to the incorporation of ICTs is higher education, an institution that has had to adapt to an approach clearly differentiated from that developed to date. In fact, there are annual publications, such as the 2020 EDUCAUSE Horizon Report[19], which include perspectives on the incorporation of new ICTs in higher education. This information is even more relevant today since the vast majority of universities have been opting for a face-to-face model. Therefore, the Covid-19 has meant that they have had to rethink, in a very short period of time, all the new implications, new practices, and new approaches in terms of research that this pandemic entails[20].

One of the most used tools, also before the arrival of the pandemic, has been the Massive Open Online Courses (MOOC). This is a digital proposal whose adaptation to the educational context has occurred naturally, especially during the last decade[21]. The pedagogical adaptation of the MOOC, unlike other technological means, is almost completely natural and allows for more traditional or more active approaches[22]. In fact, its conceptual birth is considered to be in 2008 when the name MOOC was first coined and it was after the realization of an

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online course that was followed by 2300 students through the Internet[23]. And its impact over the last decade has been such that, especially in higher education, its use is very common[24] for several reasons.

The variability of MOOCs should be highlighted. Its very nature makes it easy to be used to organize a single course, such as a single subject work, or to be considered as a digital manager of a complete course with all the subjects. In fact, it is very familiar to see MOOCs used in non-formal training, such as free courses on the Internet, and it is not too much of a surprise that these platforms are a key medium in universities like the University of Zaragoza. The adaptability of content is key, especially in a context like the current one in which face-to-face teaching is no longer the core and many of these have to be exposed and worked on through digital.

Closely linked to the above, it is also necessary to highlight the capacity of synchronous and asynchronous teaching of the MOOCs. The different media they incorporate facilitate or can be structured, in such a way that the students can develop their learning based on a defined schedule or that there is greater amplitude. Through the MOOCs, s can manage sessions or simultaneous virtual classes, which can be through applications such as Zoom or Jitsi, but also these can be recorded and published on the platform to be seen when considered. That is, the flexibility in the learning process can be as wide as you want. A fact that is very positive, above all in a pandemic framework, but that also entails great digital responsibility on the part of teachers[25] and students[26].

A fundamental factor must be commented on: access to MOOCs. Currently, the digital site can be accessed from a computer, a laptop, a tablet, or through the smartphone. This fact is key in the expansion of this type of educational approach since the requirements, such as access to the Internet or digital media, are in most cases covered. Of course, the digital divide must also be taken into account, but in general terms, MOOCs are shown to be a significantly accessible channel. In fact, it is probably the maximum exponent of educational methodologies such as blended-learning (b-learning)[27] or mobile-learning (m-learn-

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ing)[28], whose application is based precisely on online learning. And to this, we must add that there are numerous MOOC platforms that are free, an aspect that further supports their educational use.

All this can be framed within the global educational purposes, something that can help understand how MOOCs can have a very important role not in the present but in the future of education. In Spain, the MOOCs can take on capital importance in a new context of educational semi-presence and the development of the CD. In other words, MOOCs can be a means and an objective of competence development insofar as they can be a very suitable complement to digital learning. At a European level, their importance in ICT within Horizon 2020 or Horizon 2027 can also be key, especially in a context where it is necessary to resort to these means and what this means for the day-to-day life of society.

Discussion and conclusion

Once the growing role of ICTs in society has been exposed, especially in the field of education, it is time to bring the ideas together. It is clear that ICTs have arrived, are being incorporated into the daily routine, and will play a greater role in the future. During the last decade, new supports have appeared such as tablets, smartphones have been perfected and digital resources already have an almost internalized presence, as it happens with social networks. The COVID-19 has drastically accelerated a technological-educational evolution that was already taking place in some universities and was considered in a slightly more distant time frame. Moreover, during the confinement, it has been possible to see how ICTs have played a key role despite the fact that their improvement has not yet arrived.

In the specific case of the MOOCs, they have emerged as a great resource that is neither specific nor local, but rather with possibilities that can promote the development of the ODS. With regard to 'Gender Equality', objective number 5, MOOCs can help promote the reduction of an existing gender gap[29]. On 'Decent Work and Economic Growth', number 8, MOOCs can play an important role in training and support for future job development. Industry, innovation, and infrastructure', number 9, it is clear that the relationship between innovation and ICT will increase in the coming years and the CD should be taken into account in the future[30]. Numbers 11 and 12, 'Sustainable cities and communi-

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ties', and 'Responsible production and consumption' also have a direct relationship with it. In the case of MOOCs, as a digital resource, they are a technique to generate less unnecessary waste and to promote environmental education. In other words, the MOOCS as a digital educational reference can help achieve the ODS planned for 2030, a year in which the MOOCs will offer more technical and ethical possibilities.

In short: MOOCs are a significant example of the connection between technology and education in the 21st century: a digital resource that serves as a management and learning channel. In recent years its presence has been relevant, especially in the context of higher education, and now with the presence of COVID-19 has become an almost elemental resource in this stage of non-presence or semi-presence. However, it is not the perfect solution. It is also necessary to consider and affirm that MOOCs can be a great educational complement but never a direct successor to face-to-face teaching. Human contact is still inimitable by the digital environment, although it is true that there are tools available that can be very useful especially for lifelong learning, and when you cannot attend the classroom.

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Praca na rzecz Celów Zrównoważonego Rozwoju: edukacja cyfrowa wysokiej jakości podczas pandemii COVID-19

Streszczenie

Ostatnie kilka lat pokazało wyraźne zaangażowanie w cyfryzację. W przypadku edukacji ten nowy kierunek jest promowany przez cele globalne, takie jak Cele Zrównoważonego Rozwoju (SDG), oraz konkretne ustawodawstwo każdego kraju lub sam postęp technologiczny. Masowe Otwarte Kursy Online (MOOC) mogą być dobrym rozwiązaniem, zwłaszcza w obliczu nadejścia pandemii wywołanej przez COVID-19. Cyfrową propozycję, której rozwój w drugiej dekadzie XXI wieku był bardzo znaczący, należy rozważyć z kilku powodów, przede wszystkim ze względu na postulat uczenia się przez całe życie oraz dostarczanie metod nauczania-uczenia się zarówno synchronicznego, jak i asynchronicznego. Dlatego w tym artykule dokonano refleksyjnej analizy dzisiejszej edukacji i roli MOOC w tym nowym kontekście.

Słowa kluczowe: Cele Zrównoważonego Rozwoju (SDG), Masowe Otwarte Kursy Online (MOOC), cyfryzacja, uczenie się.