Artículos Originales

MOOCs to expand higher education and advance UN's development goals: The case of Mexico

Los MOOCs para expandir la educación superior y avanzar en los objetivos de Desarrollo Sostenible de Naciones Unidas: el caso de México

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Abstract

A review of MOOCs in different regions of the world is presented with emphasis in Mexico as part of regional, national and institutional policies to expand higher education and increase learning opportunities, within the context of the UN's sustainable development goals. Four common policies are identified in different regions and countries for leveraging MOOCs potential: Recognition and political will for expanding higher education and learning opportunities, acknowledge ICT´s potential to achieve these purposes, allocate adequate funding and promote collaboration amongst countries and institutions. Mexico's federal education's policy for using ICT in expanding higher education and learning opportunities seems not to be in line with worldwide common practice.

Keywords: MOOCs, higher education, sustainable development goals.

Resumen

Se hace una revisión de los MOOCs en diferentes regiones del mundo con énfasis en México como parte de políticas regionales, nacionales e institucionales para expandir la educación superior e incrementar las oportunidades de aprendizaje, en el contexto de los objetivos de desarrollo sostenible de Naciones Unidas. Se identifican cuatro políticas comunes en diferentes regiones y países para aumentar el potencial de los MOOC: reconocimiento y voluntad política para expandir la educación superior y las oportunidades de aprendizaje, reconocer el valor de las TIC para lograr estos propósitos, asignar financiamiento adecuado y promover la colaboración entre países e instituciones. La política pública mexicana parece no estar en consonancia con las prácticas mundiales.

Palabras clave: MOOCs, educación superior, objetivos de desarrollo sostenible.

Massive open online courses (MOOCs) are a global trend with over 100 million students (Shah and Pickard, 2019). Their rapid evolution results from software development, hardware storage capacity, innovative learning theories, as well as data analytical algorithms. Never in the history of education has there been a technology capable of distributing knowledge and learning opportunities to so many people for free, with the only requirement of computer access and internet connection.

Today, there are more than 60 technological platforms that host these courses from all around the world in developed and underdeveloped countries. It is true, notwithstanding, that Coursera, edX, Udacity, all three from the United States, hold the largest market share, but China´s, India´s and other countries´ platforms are rapidly catching up. MOOCs were at its highest media attention in 2012 when a New York Times article stated that they would radically change the higher education landscape. That has not been the case, but they have certainly made an enormous contribution to lifelong learning improving the qualifications of millions (Bordoloi, Das and Das, 2020).

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This paper analyses the evolution of MOOCs in different regions of the world, with special attention to Mexico, reviewing to what extent these courses have been considered at the national and institutional levels to expand learning opportunities in the tertiary sector, and advance the United Nations sustainable development agenda for 2030. In particular, sustainable development goal (SDG) number four, which states the need to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." To this respect information and communication technologies are to be used as levers.

In their very short history MOOCs have passed from being massive, online, and open to a completely new set of diverse teaching and learning formats, some of which follow the original design, but with many others totally different that have made radical changes to their design and business models (Shah, 2016). It is important to remember that in the beginning MOOCs were conceived as a means to take advantage of open education resources following on MIT's OpenCourseWare initiative and UNESCO's coining of the term and support of Open Education Resources at its 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries. At least that was what Downes (2012) proposed in the first connectivist MOOC at the University of Manitoba, Canada in which 200 students were enrolled in the course and 2,000 more participated for free without being officially enrolled at the university.

In a recent timeline Yuan and Powell (2015) trace MOOCs' history from its beginning as part of the Open Source Software and Open Content movements, from 2000 to 2007, to the first Connectivist MOOC in 2008, following with the Stanford MOOC in 2011, afterwards the appearance of new open and commercial platforms and such as MIT edX, Coursera, Udacity and FutureLearn between 2012 and 2013 which gave birth to xMOOCs, and from then on a diverse plethora of MOOC variants, flipped classroom, corporate training, competency based education and new service models.

MOOCs have changed in three significant ways over the years. First, business models evolved. Initially, MOOCs were open so there were no previous academic or other types of requirements to join a course and were free of charge. Now, many platforms include a cost associated either to participate, and/or obtain a validated certificate of completion. In many cases the freemium model is used by which an interested party may review some of the materials, but is not allowed, for example, to take quizzes (Bowden, 2018).

A second major change involves instructional design. The first MOOCs were connectivist in nature, that is, they relied on social interaction, the sharing of information and the joint construction of knowledge among participants. Now many courses are designed based on a more instructional and behavioral model. In this case xMOOCs, as they are called, have precise learning outcomes and present learning materials through short videos and texts and rely on multiple choice quizzes and tasks to assess learning (Bates, 2017).

A third change refers to interaction among participants. Some platforms like Coursera have reduced the use of discussion forums or other modes of interaction (Shah, 2016). Other platforms like FutureLearn have retained this important learning component. It is important to underline that learning is a social phenomenon and that interaction plays an important role in promoting significant learning (Palacios, 2019).

Whatever position we assume, MOOCs have proven to be a powerful tool for expanding learning opportunities and upgrading the qualifications of millions (Joint Research Center, 2016). In our current knowledge society, keeping abreast of discoveries and technological advances are critical for the world´s economy. Innovation in the private and public sectors are of paramount importance to economic growth and social wellbeing.

Universities play a significant role in creating new knowledge and teaching students the science behind it, as well as its applications to solve societal needs, creating value added in the production, commercial and service areas of the economy and promoting core values like

freedom, tolerance and dignity (UNESCO, 2017). Within the framework of UN's SDG4, target 4.3 states that by 2030, countries should "provide equal access for all women and men to affordable and quality technical, vocational and higher education, including university" (UNESCO, n/d).

Worldwide enrolment in higher education has been growing steadily: Between 2000 and 2014, the number of students in higher education institutions more than doubled, rising from 100 million to 207 million (UNESCO, 2017 p.1). Gross enrolment ratios have also increased from 19% to 34% in the same period with important differences among regions with average ratios of 8% in Sub-Saharan regions to 75% in Europe and North America (Op cit. p.1). Nevertheless, the growing demand from middle classes and higher transition rates from secondary education, as well as external workforce new skill requirements will exert pressures for expanding higher education opportunities.

Mexico´s potential age group higher education enrollment is 38.4% (ANUIES, 2018, p. 55). We did not achieve the goal set in the past President Peña Nieto's administration of 40%, a goal established in the country's development plan. We are also yet to achieve enrollments attained by Latin American countries such as Cuba, Argentina, Chile, Uruguay and Costa Rica. And current enrollment rates are below the region's average of 48.8% (Op cit. p. 56), and way below OECD countries' average of 72.8% (Op cit. p. 56). It is paramount for Mexico to increase the number of people with higher education studies if we want to participate and compete successfully in the current knowledge society.

The fourth industrial revolution characterized by the interaction across the physical, digital and biological domains will place even greater demands on educational systems in general, and higher education in particular (Gleason, 2018). This scenario is even more complex if we consider society's pressing needs to reduce poverty, solve curable maladies, increase employment, promote gender equality, ensure water supply, reduce global warming and support wildlife and environment protection. All of these issues are encompassed in the 17 UN's SDG.

It is true that there are barriers to leverage the full potential of MOOCs. Much is needed to improve course completion rates, broadband Internet access, IT skills and the design and production of relevant programs that meet regional, national and local demands. But it is also true that brick and mortar institutions will not be enough to satisfy the demand of higher education and upgrade the competencies of the world's workforce, as well as advance UN's sustainable development goals.

What are countries doing to take advantage of this rather new technology? Have MOOCs found a place in regional and national policies or have educational institutions taken the lead themselves? Or is there a combination of both?

Following is a brief review of what different regions, countries and institutions are doing to this respect, and afterwards an analysis is made of Mexico's role in this worldwide trend.

Regional perspectives on MOOCs, higher education and learning opportunities

Europe has taken bold steps to boost production and expansion of MOOCs. Recently the European MOOC Consortium (EMC) was established gathering as partners the following main technological platforms: FutureLearn, France Université Numérique, OpenupEd, Miríada X and EduOpen. This consortium represents five networks of universities with over 280 universities together, more than 2000 courses and current enrollment of over 15 million students.

In their recent position paper they acknowledge that MOOCs are here to stay representing an important area of provision in the higher education system. Not only contributing to the digital innovation in higher education but more importantly "offering a response to the widespread challenge of meeting the future needs of employers and employees

for smaller, flexible and regular knowledge and skills development to cope with a fast changing world" (European MOOC Consortium, 2017, p.1).

Moreover, the EMC has recently launched a Common Microcredential Framework that will enable MOOCs to receive academic credit. These courses are aimed to be recognizable between countries and different higher education institutions, creating an ecosystem where interested learners may choose to study microcredentials within the network that may be used towards a larger qualification, such as a postgraduate certificate or Master's degree.

It is important to underline that the EMC currently offers more than 1000 courses in languages like English, French, Spanish and Italian. This allows catering to learning needs of a wider European population, much in line with UN's SDG4. As a region Europe has also been at the upfront in using MOOCs to promote sustainable development. The Moonlite project has focused on ways in which MOOCs can support refugees, migrants and students in their access to higher education and employment (Read, 2016).

Norway provides an interesting example of a country taking MOOCs to the highest nation's priority level of importance. By Royal Decree a Commission was created in 2013 with the following mandate:

> Examine the possibilities and challenges that accompany the development of MOOCs and similar offers. The Commission shall map the development, compare the information gathered, and provide Norwegian authorities and educational institutions with recommendations on how to relate to this development, while also taking advantage of the opportunities provided by modern technology. (Official Norwegian Reports, 2014, p.7)

Six specific measures were made to government authorities, accompanied by yearly financial allocations in support for each one. The recommendations included, among others, institutional access to platforms adapted to Norwegian and Sámi languages, a central support function for the development of MOOCs, and public funds for collaboration initiatives between authorities and social partners in expertise development using MOOCs (Op cit. p. 3).

It is clear that Europe has recognized that MOOCs are an important tool to widen learning opportunities of its population and to allow for the establishment of flexible, smaller and certifiable programs that improve peoples' qualifications and allows for lifelong learning pathways aligned to UN's SDG4.

Africa has also turned to MOOCs as a way to deal with specific demands on their education systems. The MOOCs for Africa and Emerging Countries Programme has gained momentum and represents what can be achieved through vision, strategic planning and public and private partnerships. Leaded by the Ecole Polytechnique Féderale de Lausanne (EPFL) the program is a network of 11 partner universities in sub-Saharan Africa, that produced or co-produced over 48 MOOCs, of which 13 are the product of North-South collaboration with over 200,000 registered participants from Africa (Escher, et al., 2014).

Furthermore, the EPFL program has advanced curricular innovations through a hybrid education model that takes advantage of MOOCs, face to face interaction, proctored testing and practical hands-on work experience. Working closely with future employers, graduates have improved opportunities of obtaining a job (Noukakis and Dillenbourg, 2017).

Other examples of the use of MOOCs in Africa are part of the Commonwealth of Learning's initiatives, which has produced a series of MOOCs for Development (Commonwealth of Learning, n/d). These courses focus on issues of sustainable development that have immediate or near term impact, clearly in line with several UN's SDGs. They are designed in such a way as to remove entry barriers allowing participation of developing countries' academics and institutions to offer large-scale MOOCs. Also these courses include

technology options that overcome low bandwidth infrastructures, providing offline learning opportunities (Porter, et al., 2015).

The Asia-Pacific region has also acknowledged MOOCs to be part of the solution to an increasing demand for higher education and provision of upgrading much needed skills in their workforce. In 2017 the Asia-Pacific Ministerial Forum on ICT in Education was held in Seoul, Republic of Korea (UNESCO, 2017). In this case we observe firm support from Ministers, high-level government officials, representatives of key stakeholders and experts from Asia-Pacific UNESCO member states to leverage the full potential of ICT in alignment to SDG number four. For this purpose four priority areas have been identified: 1. Secondary education, technical vocational education and training, and higher education; 2. Quality of teaching and teaching practices; 3. Inclusion and equality, and 4. Monitoring and evaluation (Op cit. p.1).

Moreover, as a follow-up meeting, the Asia-Pacific Regional Seminar on MOOCs for Higher Education: Seizing Digital Opportunities to Achieve SDG4, was held in June 2018 in Shenzhen, People's Republic of China (UNESCO IITE, 2018). The Seminar brought together more than 100 policy makers, UNESCO representatives, and education experts from 20 countries in the Asia-Pacific region. Among its main objectives the Seminar convened national platforms to "exchange experiences and assess readiness for a regional network on MOOCs in the region and develop a research framework for a new flagship publication to analyze gaps and opportunities for MOOC policies and practices to achieve SDG4" (Op cit. p.1).

Malaysia is a case in point as another example of a national strategy to take advantage of MOOCs in their education system. Recently the Ministry of Education published the Malaysia Education Blueprint 2015-2025 (Higher Education) in which it establishes the goals of increasing student enrollment, enhancing the quality of teaching and learning and globalyzing Malaysian higher education institutions by integrating MOOCs in the higher education system (Malaysian Ministry of Education, 2015). The Ministry of Education considers that MOOCs facilitate equality by being able to reach a diverse and wide audience including higher education students, but also people of all ages who are not currently enrolled in a higher education institution. Also, given the fact that MOOCs are open and globally accessed, it provides an opportunity for universities to increase their quality standards to international levels. And lastly, it is considered that MOOCs may reduce costs of delivering teaching and learning while maintaining quality (Nordin, et al., 2018).

The United States has led MOOC´s worldwide expansion through Coursera and Udacity as commercial endeavors, but also through edX which is open source. Many innovations have been made in recent years that portray a diversified landscape of learning offerings by US platforms. One important shift is the possibility of acquiring academic credit for successfully completing MOOCs. The recent endorsement of the National Council on Education (Stone, 2016, p.4) to award academic credit to a selected group of MOOCs offered through Coursera and Udacity platforms, opens a new pathway for certified lifelong learning. This new development has set the background for an increasing number of MBAs and other certifiable degrees based on MOOCs (Cortes, 2019). We will certainly see this trend continue in upcoming years.

Common practice across regions

Before reviewing what Mexico is doing on the use of MOOCs to expand higher education and increase learning opportunities, it is worthwhile to summarize the different, but complementary approaches and strategies undertaken so far by different regions, governments and institutions.

First of all, is the recognition at the national level of the need to increase higher education enrollment and expand learning opportunities. Without political will within decision

making areas of governments there is little chance that institutions by themselves will be able to respond effectively to this challenge (Calderón, 2018).

Secondly, technology has to be considered as a tool to expand learning opportunities. Online, open education and MOOCs depend on a robust technological infrastructure without which access is limited. Public and private IT investment is essential. Nevertheless, as was mentioned before, there are initiatives in place that allow participation in these modes of learning with strategies to overcome technological barriers (KPMG International, 2020).

Thirdly, regional, national, state and institutional funds need to be allocated for the development of MOOCs. High quality online education and MOOCs are expensive to produce, but their scalability provides a positive and solid return of investment (Baker and Passmore, 2016).

Fourthly, cooperation at the regional and national level is important. MOOCs represent an opportunity to deploy collaborative initiatives that make use of local and regional strengths (Escher et al., Op cit. 2014).

Mexico's policies on higher education and expanding learning opportunities

Mexico's new federal government has established equity access to education as the main principle that will guide educational policies. In line with this idea a recently approved constitutional amendment has made higher education to be gradually compulsory, such as secondary and primary education and aligned to the principle of equity in access to learning opportunities. The definition of strategies and steps to accomplish this purpose are in process, but, several programs have been proposed towards that end. One of these is the No Rejection Program (SEP, 2019) that will benefit 25,000 youngsters who tried to get into one of the public higher education institutions of Mexico City and the states of Mexico and Morelos and were rejected, based on their score in the entrance examinations. The program offers the opportunity to enroll in one of the 94 public institutions and 58 private ones participating in the program. It is understood that students will not be required to present an entrance examination. In the case of public institutions there will be no tuition charges and for the private one's special discounts are being offered.

It is interesting to note that the whole issue of existing entrance examinations has been the motive of debate between government and public universities' officials regarding its place in the context of a new open access policy. The debate steps on the university's autonomy to use them, so dearly held in the heart of Mexican higher education academia. In official discourse, entrance examinations reflect neoliberal policies denying the right of many young people to higher education in the past.

A second initiative already put in place involves creating 100 universities (Universidades para el Bienestar Benito Juárez García) spread across the country, offering academic programs linked to different societal and development needs. These brick and mortar institutions are set to provide higher education for up to 300,000 students by 2024 (SEP, 2019). In these universities there is no entrance examination, but students are subject to an academic diagnostic procedure aimed at identifying development areas of opportunity. Enrollment is free of charge. Every enrolled student receives a monthly 2400 pesos (approximately US$120) stipend for up to 10 months but may continue receiving this support throughout their enrollment in the university. Very little is still known regarding universities' educational model, use of ICT and pedagogies. What is known is that students, the government says, will receive all needed educational materials and access to computers for free.

It is clear, these two projects, as important and legitimate as they may be, will not be enough to meet current and future education demands, not even with private institutions'

participation. The demand of higher education and upgrading of Mexican workforce needs to be met.

Mexico′s non-school based university system

In Mexico there are two general categories by which higher education institutions are defined: school based and non-school based. The first type includes all face to face higher education institutions and the second one refers to mixed, open, distance and virtual institutions (ANUIES, 2018, p. 61). Due to this generic classification of institutions it is impossible to know exactly how many students are enrolled in distance education or virtual programs. Official statistics are provided for the two groups of institutions as a whole, without separating students enrolled in programs, non-school based, that are in fact face to face programs carried out on Saturdays. This is the case, for example, of the Universidad Popular Autónoma de Veracruz (UPAV) which is known to have one of the largest enrollment figures of public non-school based universities.

Notwithstanding this situation, non-school based enrollment has grown in recent years, but not at a significant pace in response to increasing needs. Between 2000 and 2018 non-school based enrollment grew from 150,000 to 696,000 (op. cit. p. 61). Currently 14% of bachelor and 32% of graduate program enrollment belong to this category of non-school based institutions. Private institutions are responsible for 81.4% of non-school based enrollment, adding bachelor and graduate programs together. Public institutions represent only 18.5% of both educational levels. Mexico's Open University (Universidad Abierta y a Distancia de México) had 51,540 students in the 2017-2018 academic year, which represents 8.8% of bachelor enrollment and 0.4% of graduate studies (Op cit. p. 62). These figures contrast greatly with what Brazil has achieved in distance and virtual education (Rama, 2017). And of course, way behind what countries like the United States, Canada, Australia, China and India have attained with enrollments of hundreds of thousands or millions of students (Mercado, 2011).

Until very recently Mexico´s involvement in MOOC production was limited to two universities: UNAM and Monterrey TEC. Both institutions signed agreements with Coursera to host their MOOCs back in 2013. The production of courses and programs has risen considerably since then, and the enrollment figures have skyrocketed. Adding the number of participants in both their courses, figures come close to almost four million. As with other international institutions dropout rates have been high.

In 2015, Mexico's federal government, through the Ministry of Education, signed an agreement to use edX, Harvard and MIT's open source MOOC platform to enable the development of Mexico X. To date more than 70 different institutions and organizations participate or have participated in Mexico X. Enrollment figures have also grown considerably and they are estimated to be above the 2 million mark. Enrollment combined from UNAM, Monterrey TEC and Mexico X is greater than the country's higher education school based population. This information alone provides a fresh and promising perspective in ways to increase the country's education levels and workforce competencies.

Mexico's perspective on the use of MOOCs to expand higher education and further UN's sustainable development goals

Given the worldwide growth of online higher education in general and of MOOCs in particular, one would think that the new government would consider increasing the Universidad Abierta y a Distancia de México's, capacities, which currently offers 23 bachelor level programs and has reached enrollment figures of over 50,000 students. As well as supporting

the expansion of other existing public virtual universities in the states of Michoacán, Guanajuato, Veracruz, and Mexico, and assisting jointly many school based universities that have developed online bachelor and master's level programs. One could also imagine Mexico X's growth in terms of new partners and better programs designed to improve course completion and better alignment to traditional universities in order to guarantee program's quality assurance and academic recognition.

But, unfortunately, it seems that this is not the case. There is no reference in federal government publications to initiatives on the use of information and communication technologies to increase higher education enrollment and expand learning opportunities, or to use these technologies to advance the UN's sustainable development agenda. Furthermore, the Mexico X platform has seen a decrease in its operational budget and the dismissal of its more capable human resources. In addition to this, a World Bank loan of 130 million dollars (Hawkins, 2018) approved in 2017 has not been signed and executed. One of its goals was to produce 100 digital educational resources. No explanation has been given as to why this project has not been executed. It is also preoccupying to acknowledge that there is also scarce reference in the National Association of Universities and Higher Education Institutions' publication Visión and Acción 2030 on the use of MOOCs to support higher education growth or expand learning opportunities (ANUIES, 2018). MOOCs are mentioned twice in this document: one as a footnote on page 61, and two on page 125 inside a parenthesis referring to the certification of competencies acquired through them. It has to be acknowledged, notwithstanding, that it does propose increasing quality non-school based higher education as one of its policies and goals (Op cit. p. 117). It would seem, nevertheless, that MOOCs are not a priority in national university organizations and the Fourth Transformation proposed by President López Obrador.

Mexico's federal government has expressed its commitment to ensure that no person will be excluded from higher education and with the recent amendment to the Constitution, making higher education gradually compulsory, the path is set to achieve this goal by the year 2024. Also, the federal government has made it public its will to pursue the UN's development goals. It is expected that the three levels of government in Mexico participate and contribute to sustainable human development initiatives.

The fourth sustainable goal, specifically goal 4.3 is a challenge that needs to be met recognizing the value associated with expanding higher education and lifelong learning opportunities. Mexico's federal government has expressed that equity in access to education is a national priority. Current programs, important as they may be, seem not to be sufficient to meet the requirements of economic and social educational demands. Equity in access to learning can be improved through the use of online education and MOOCs, as the different examples referred to previously in this paper have shown.

There is worldwide interest in the use of online education and MOOCs at regional, national and institutional decision levels. Governments have committed political will and economic support to leverage ICT supported education and MOOCs' potential to expand higher education and contribute to reaching the UN's 17 sustainable development goals. Four common features have been identified in this process: 1. Acknowledging importance of higher education, 2. Using technologies as levers, 3. Allocating public funds to produce high quality digital resources and 4. Promoting collaboration between regions and institutions.

Mexico has recognized the importance of higher education but has not expressed interest in participating in the remaining three areas.

Connectivity is vital for online and open education. Technology infrastructure investment has to be addressed to reduce the digital divide in Mexico. Current Mexican internet reach 71% of the population six years and older (Asociación de Internet, 2019), but fixed broadband subscriptions are only 18 and a half million, while mobile ones are 88 million (OECD, 2019). The Internet for All program proposed as one of the 25 Priority Projects of

Lopez Obrador's administration is promising. In addition to this, it is imperative to acknowledge ICT's possibilities for increasing inclusion to learning opportunities. Up to now the new federal government has shown little interest in taking advantage of its potential. Institutions by themselves are working towards this end. UNAM's and Monterrey Tech's participation is noteworthy, as well as other public universities and organizations, including some federal offices, which are producing MOOCs and contributing to meet UN's SDGs (Mercado, 2018).

National and regional organizations should also play a role in this regard. But as was mentioned earlier ANUIES's documents they do not mention MOOCs at all or make scarce reference to their potential. Neither does, at the regional level, the Common Space for Online Higher Education (ECESELI) of the Union of Latin American and Caribbean Universities' (UDUAL, n/d).

Finally, producing and deploying quality online programs and MOOCs require adequate economic support. As has been made evident in the different regions and national perspectives reviewed in this paper. Allocation of financial resources is essential for increasing distance and open education opportunities. Mexico is in urgent need of a national strategy to be part of the worldwide scenario of open education for all, and consider higher education and MOOCs not only as public goods but rather as common ones.

One could see the present Covid-19 pandemic as a window of opportunity to take advantage of what almost all higher education institutions had to do in order to maintain their academic activities through the use of ICT´s. Never before have ICTs been more important. Without email, social media, ZOOM, TEAMs and other video-conference platforms worldwide higher education would have had to lockdown. But it didn't. Universities immediately put in place strategies to maintain communication with their students and continue its academic offerings.

In many cases what has been done is not what distance or online learning should be like, but it has shown its potential. Very soon we will see many institutions experimenting with flipped classrooms or even maintaining their current online programs and producing more MOOCs. Mexico's federal government though its Ministry of Education, the National Association of Universities and higher education institutions have the opportunity to build upon these initiatives by recognizing ICT´s contribution in the present crisis, allocate special funds for the production of MOOCs and other online programs, and supporting collaboration between universities and other stakeholders.

In the current and near future scenario of distance higher education and MOOCs, much is still to be learned from research in issues related to improving retention rates, increasing inclusion of populations otherwise left out, ensuring student engagement through better instructional design, upgrading faculty and certifying competencies acquired. It is paramount that efforts be deployed by higher education institutions and other organizations to demonstrate governments and society in general that distance education and MOOCs are effective alternatives to augment qualifications of people and contribute effectively to UN's SDGs.

REFERENCES

ANUIES (2018). Visión y Acción 2030. Propuesta de la ANUIES para renovar la educación superior en México. Cdmx: ANUIES. Retrieved from: http://www.anuies.mx/media/docs/avisos/pdf/VISION_Y_ACCION_2030.pdf

Asociación de Internet MX (2019). 15 Estudio sobre los Hábitos de los Usuarios de Internet en México 2018. Retrieved from: file:///C:/Users/usuario/Downloads/15+Estudio+sobre+los+Ha_bitos+de+los+Usuarios+de+Internet+en+Me_xico+2019+versio_n+pu_blica.pdf

Baker, R., Passmore, D. (2016). Value and Pricing of MOOCs. Retrieved form: https://www.researchgate.net/publication/303597368_Value_and_Pricing_of_MOOCs

Bates, T. (2017). Teaching in a Digital Age. Retrieved from: https://opentextbc.ca/teachinginadigitalage/

Bordoloi, R., Das, P. Das, K. (2020). Lifelong learning opportunities through MOOCs in India. Asian Association of Open Universities Journal. Vol.15, No.1 pp. 83-85. DOI 10.1108/AAOUJ-09-2019-0042

Bowden, P. (2018). Five Years of MOOC Trends. Retrieved from: https://www.classcentral.com/report/five-years-mooc-trends/

Calderón, A. (2018). Massification of Higher Education Revisited. Retrieved from: https://www.academia.edu/36975860/Massification_of_higher_education_revisited

Commonwealth of Learning (n/d). Massive Online Open Courses for Development. Retrieved from: https://www.mooc4dev.org/

Cortes, M. (2019). Boston University Announces Online MBA on edX. ClassCentral. Retrieved from: https://www.classcentral.com/report/boston-university-online-mba-edx/

Downes, S. (2012). The rise of MOOCs. Knowledge, Learning, Community. Retrieved from: https://www.downes.ca/cgi-bin/page.cgi?post=57911

Escher, G., Noukakis, D., Aebischer, P. (2014). Boosting Higher Education in Africa through Shared Massive Open Online Courses (MOOCs). I*nternational Development Policy | Revue internationale de politique de développement* [Online], 5. Retrieved from: DOI: 10.4000/poldev.1790

Joint Research Center (2016). Validation of Non-Formal MOOC-based Learning. An Analysis of Assessment and Recognition Practices in Europe (OpenCred). Retrieved from: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC96968/lfna27660enn.pdf

Hawkins, Robert J. (2018). *Disclosable Version of the ISR - Mexico Higher Education Project - P160309 - Sequence No: 04 (English)*. Washington, D.C.: World Bank Group. Retrieved from: http://documents.worldbank.org/curated/en/219571545168083173/Disclosable-Version-of-the-ISR-Mexico-Higher-Education-Project-P160309-Sequence-No-04

Gleason, N. (2018). Higher Education in the Era of the Fourth Industrial Revolution. Retrieved from: https://www.researchgate.net/publication/325902374_Higher_Education_in_the_Era_of_the_Fourth_Industrial_Revolution

KPMG International (2020). The future of higher education in a disruptive world. Retrieved from: https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/10/future-of-higher-education.pdf

Lifelong learning and the EHEA agenda. Contribution of the European MOOC Consortium, (2018). Retrieved from: https://eadtu.eu/documents/Services/2018_-_Integrating_MOOCs_Bologna_Process.pdf

Mercado, R. (2011). El aseguramiento de la calidad en el Instituto Consorcio Clavijero. Revista Iberoamericana de Educación a Distancia. Vol. 14, Núm. 2. Retrieved from: http://revistas.uned.es/index.php/ried/issue/view/120

Mercado, R. (2018) (Coord.). Cursos masivos abiertos en línea (MOOCs): El caso de México. Córdoba: Brujas. Retrieved from: www.uv.mx/blogs/brechadigital/files/2018/12/hdt6.pdf

Ministry of Education Malaysia (2015). Malaysia Education Blueprint 2015-2025 (Higher Education). Malaysia Ministry of Education. Putrajaya: Kementerian Pendidikan Malaysia. Retrieved from: https://www.kooperation-international.de/uploads/media/3._Malaysia_Education_Blueprint_2015-2025__Higher_Education__.pdf

Nordin, N., Amin, M., Norma, H. (2018). Malaysia MOOCs: The Way Forward. En: Kim, B. (Ed). MOOCs and Educational Challenges around Asia and Europe. Seoul: KNOE Press. Retrieved from: https://www.researchgate.net/publication/307638411_Malaysia_MOOCs_The_way_forward

Noukakis, D., Dillenbourg, P. (2017). MOOCs for Africa and emerging countries: Challenges and Opportunities. Retrieved from: http://www.kaowarsom.be/documents/Energy4Africa/SustainableEnergy4Africa_Noukakis.pdf

OECD (2019). Penetration and data usage, latest data update july 2019. Retrieved from: https://www.oecd.org/sti/broadband/broadband-statistics/

Official Norwegian Reports NOU 2014:5. MOOCs for Norway. New digital learning methods in higher education. Retrieved from: https://www.regjeringen.no/contentassets/ff86edace9874505a3381b5daf6848e6/en-gb/pdfs/nou201420140005000en_pdfs.pdf

Palacios, A. (2019). Aprendizaje significativo, interacción verbal y metacognición. Meaningful Learning Review. V9 (3), pp. 17-26. Retrieved from: http://www.if.ufrgs.br/asr/artigos/Artigo_ID151/v9_n3_a2019.pdf

Porter, D., Mcgreal, R. (2015). A policy brief on MOOCs. Commonwealth of Learning. Retrieved from: http://oasis.col.org/bitstream/handle/11599/825/Policy%20Brief%20on%20MOOCs%20May%2025%20HQ%20print.pdf?sequence=1&isAllowed=y

Rama, C. (2017). La fase actual de expansión de la educación en línea o virtual en América Latina. Universidades Año 5 Núm. 17, Núm. 70. Retrieved from: http://publicaciones.udual.org/doss70-presenta.html

Read, T. (2016). Moonlite the Hague Declaration. Establishing MOOCs as a tool for social change. Retrieved from: https://eadtu.eu/documents/Publications/OEenM/2019_-_The_Hague_Declaration_MOOCs.pdf

Secretaría de Educación Pública (2019). Programa de Universidades para el Bienestar Benito Juárez García. Retrieved from: https://www.gob.mx/sep/articulos/universidades-para-el-bienestar-benito-juarez-garcia

Shah, D. (2016). MOOC Trends in 2016: MOOCs No Longer Massive. Retrieved from: https://www.classcentral.com/report/moocs-no-longer-massive/

Shah, D., Pickard, L. (2019). Massive list of MOOC providers around the world. Retrieved from: https://www.classcentral.com/report/mooc-providers-list/

Stone, J. (2016) Awarding college credit for MOOCs: The role of the American Council on Education. Education Policy Analysis Archives, 24(38). Retrieved from: http://dx.doi.org/10.14507/epaa.24.1765

UDUAL (n/d). Espacio Común de Educación Superior en Línea. Retrieved from: https://eceseli.cuaed.unam.mx/

UNESCO (n/d). Global Education Monitoring Report. Retrieved from: https://en.unesco.org/gem-report/sdg-goal-4

UNESCO (2017). Six ways to ensure higher education leaves no one behind. Policy Paper 30, April 2017. Retrieved from: https://en.unesco.org/gem-report/six-ways-ensure-higher-education-leaves-no-one-behind

UNESCO (2017). Asia-Pacific Regional Strategy on Using ICT to Facilitate the Achievement of Education 2030 Asia-Pacific Ministerial Forum on ICT in Education 2017. Retrieved from: https://bangkok.unesco.org/sites/default/files/assets/article/ICT%20in%20Education/files/amfie-2017asia-pacific-regional-strategy.pdf

UNESCO IITE (2018). UNESCO IITE at the Asia-Pacific Regional Seminar on MOOCs for Higher Education. Retrieved from: https://iite.unesco.org/news/unesco-iite-at-the-asia-pacific-regional-seminar-on-moocs-for-higher-education/

Yuan, L. Powell, S. (2015). MOOCs and Open Education: Implications for Higher Education. JISC CETIS. Retrieved from: http://publications.cetis.org.uk/wpcontent/uploads/2013/03/MOOCs-and-Open-Education.pdf