

Received:
10 October 2018
Revised:
28 November 2018
Accepted:
5 March 2019

sMOOC: A pedagogical model for social inclusion

Cite as: Carmen Marta-Lazo, Sara Osuna-Acedo, Javier Gil-Quintana. sMOOC: A pedagogical model for social inclusion. *Heliyon* 5 (2019) e01326. doi: [10.1016/j.heliyon.2019.e01326](https://doi.org/10.1016/j.heliyon.2019.e01326)



Carmen Marta-Lazo^a, Sara Osuna-Acedo^b, Javier Gil-Quintana^{c,*}

^a University of Zaragoza, Calle San Juan Bosco, 7, Zaragoza 50009, Spain

^b Spanish National Distance Education University (UNED), Calle Juan del Rosal, 14, Madrid 28040, Spain

^c Catholic University of Ávila, Calle de los Canteros, s/n, Ávila 05005, Spain

* Corresponding author.

E-mail address: javier.gil@ucavila.es (J. Gil-Quintana).

Abstract

In this article, the results of analysing the sMOOC launched by European project *E-learning, Communication, Open Data* (ECO) are displayed, from the perspective of social inclusion. Firstly, it considers people excluded from the system and, on a second stage, attention is brought towards those agents acting as social mediators. A quantitative methodology of analysis was applied to the interactions occurred in a sample of 1,361 participants at ECO Portal's course "Education Innovation and Professional Development. Possibilities and Limits of the ICTs". Results show that ECO has massively promoted sMOOC-based training and has become present, not only in Europe, but also in a wider geographical spread, particularly in developing countries. Such training offering has been highly valued by participants in aspects related to the knowledge acquired and them feeling active role-players in the education process, which increases their commitment towards sharing that training in diverse social environments and, as a result, makes a significant impact on social inclusion processes.

Keywords: Anthropology, Education, Information science, Sociology

1. Introduction

The sMOOC model has been implemented since 2014 (Osuna-Acedo and Gil-Quintana, 2017), counting on a more social, participative, ubiquitous and

intermethodologic perspective (Marta-Lazo et al., 2016). This model seeks to empower students and strives to reinforce an engagement inherent to the virtual learning community, but also to make an impact through the improvement of the social layers (Osuna-Acedo and Gil-Quintana, 2017). For Reschly and Christenson (2012) the addition of the term “*engagement*” applied to the education sphere corresponds to Mosher and McGowan (1985). Since its origins, this concept was identified as an aggrupation of multiple manifestations and contexts related to students’ engagement and their empowerment in learning processes. Such projection includes a wide scope of emotional, behavioural and academic issues, developing both in and out of the education scenario (Ainley, 2012). In this sense, it can be confirmed that, on digital training scenarios, learning disseminates through open social networks that contribute to the construction of collective intelligence from an horizontal and bidirectional communication model and an interactive, participative methodology, especially in the field of knowledge transfer, which hints a new model, currently in research process, known as *transfer*MOOC or tMOOC (Osuna-Acedo et al., 2018a,b). The tMOOC model not only promotes collective learning from a pedagogical perspective, but also has citizens’ commitment as its final goal. Thus, the premise to follow on these spaces would be: “no one knows everything, everyone knows something, all knowledge resides in humanity” (Lévy, 1997, p.20), which means that we are all part of it and therefore must contribute to its construction.

Following this line of thought, a number of institutions coordinated by Spain’s National University of Distance Education (UNED), based on the sMOOC model to develop the European Project ECO (*Elearning-Communication-Opendata*), which spanned between February, 2014 and January, 2017 and provided the scientific background for the present study. From the first year of the project, all the institutions listed in Table 1 worked together to implement a global MOOC platform through ECO.

The innovative characteristics of MOOCs have aroused our interest towards research in ECO European Project’s context. Our analysis has reached out beyond materials and resources provided by the platform and progressed towards positioning interaction as an essential element in a learning process based on participation, dialog and exchange of knowledge among participants. From this research work, we have focused on the course: “Education Innovation and Professional Development. Possibilities and Limits of the ICTs” and, more specifically, on 1.361 students at the course’s five iterations (first iteration, from November 3th, 2014 to January 26th, 2015; second iteration, from April 20th, 2015 through June 20th, 2015; third iteration, from October 5th of October to 18th of December, 2015; fourth iteration, from March 7th to May 16th, 2016 and a fifth iteration, from October 3rd to December 5th, 2016) who voluntarily participated in a data recollection tool purposely designed by the Project team. The periods between each iteration were used to review the MOOCs,

Table 1. Partners ECO project. Source: Compiled by authors.

No	Name	Short name	Country
1	UNIVERSIDAD NACIONAL DE EDUCACION A DISTANCIA	UNED	Spain
2	UNIVERSIDAD DE ZARAGOZA	UNIZAR	Spain
3	OPEN UNIVERSITEIT NEDERLAND	OUNL	Netherlands
4	UNIVERSIDAD DE VALLADOLID	UVA	Spain
5	THE UNIVERSITY OF MANCHESTER	UOMAN	United Kingdom
6	UNIVERSIDADE ABERTA	UAB	Portugal
7	UNIVERSIDAD DE OVIEDO	UNIOVI	Spain
8	POLITECNICO DI MILANO	POLIMI	Italy
9	EUROPEAN DISTANCE AND E-LEARNING NETWORK LBG	EDEN	United Kingdom
10	UNIVERSIDAD DE CANTABRIA	UNICAN	Spain
11	REIMER IT SOLUTIONS B.V.	REIMER IT	Netherlands
12	SÜNNE EICHLER BERATUNG FÜR BILDUNGSMANAGEMENT	SE	Germany
13	FUNDACION UNIVERSIDAD LOYOLA ANDALUCIA	LOY	Spain
14	UNIVERSITE PARIS III SORBONNE NOUVELLE	SOR	France
15	TABARCA CONSULTING	TABARCA	Spain
16	GEOGRAPHICA	GEO	Spain
17	FEDRAVE	FEDRAVE	Portugal
18	RIVERTHIA	RIV	Spain
19	VERENIGING VAN EUROPEAN DISTANCE TEACHING UNIVERSITIES	EADTU	Netherlands
20	UNIVERSIDAD MANUELA BELTRÁN	UMB	Colombia
21	HUMANCE AG	HUMANCE	Germany
22	UNIVERSIDAD NACIONAL DE QUILMES	UNQ	Argentina

while new updates and improvements based on the evaluations were made by teachers and students. The project's key set of goals comprise analysing requirements for sMOOC platforms from a pedagogical, communicative and inclusive perspectives, creating a design and implementation framework for sMOOCs, piloting courses jointly with the ten institutions engaged in ECO, train over 56,000 students (regardless of their origin, culture and abilities) and, finally, turning 4,000 educators into e-teachers with a choice to develop their own MOOCs in ECO (Osuna-Acedo et al., 2018a,b) and, overall, raising awareness towards the benefits of open online resources in Europe. ECO Project, registered in the *Competitiveness and Innovation Framework Programme* has contributed, through open access, to citizenship training and to the collective construction of knowledge from Europe. Its goals are based on a series of objectives previously planned with a long-term perspective (2014–2017) and presented through an assortment of courses that have provided with opportunities for active and inclusive participation to a large number of students of different nationalities, interest and professional backgrounds. All these has made a significant

impact in social change, since it has aimed to train teachers in six languages, thus considering them social change agents at all educative levels, as well as further mediators of the mentioned change.

Taking participants in ECO sMOOCs as reference, and applying a quantitative research method, this studio has showed how the Project has contributed to a massive expansion of knowledge, positioning itself not only in Europe but also further away, especially in developing countries. The communicative and pedagogical model featured in sMOOCs has been positively assessed by all participants in the research work, who reportedly considered the learning achieved as a satisfying experience, and claimed they felt an active part of its implementation which, therefore, increased their commitment to share their training in diverse social contexts.

2. Theory

From an educational perspective, we can approach inclusion as a model to enable an eventual participation of citizens, or as a mean to permit the development of a critical citizenship who will favour social transformation towards a fairer society, impulse the sense of personal responsibility to take action and, probably, raise interest towards the necessary skills to achieve those goals (Haste, 2017). Such education reality has been reinvigorated by the media revolution which has reversed the pyramid of power to communicate and to influence, as well as the limits within those effects are possible. In this education and communication context, “EMEREC” (Cloutier, 1973) persons are developing. These EMERECs (*émetteur/récepteur*, French for sender-receiver) are senders and receivers at the same time and in different ways, and they use multiple options to communicate freely in the digital society we live in. The EMEREC contribute to erase social inequality and their actions involve an enhanced mastery, as mediating agents or *influencers*, of the current training systems, which have increased their degree of innovation and personalisation.

Undoubtedly, social technologies are favouring interaction, participation and management of all kind of content on the Internet, thus contributing to the construction of digital scenarios which have evolved from the traditional e-learning, with fixed, institutionalised content, to a 2.0 reality, open and collectively built by the citizenship (Downes, 2005). Based on the “three Cs” theory (Macías, 2016), *content*, *construction* and *collaboration*, the development of a multiple literacy encouraging a critical citizenship capable of constructing the truth instead of destroying or despising it, has proven vital. Accordingly, digital literacy enables citizenship to know the digital reality as, for instance, displayed in a recent study based on the analysis of 126,000 Twitter *Twitterfalls* threads between 2013 and 2017, carried out by

Vosoughi, Roy & Ara at Mass from Massachusetts Institute of Technology (MIT). The study demonstrates that the so-called *fake news* reach a larger number of people and impact them more deeply and widely than fact-based news, in all informative categories (Soroush et al., 2018).

In this social context, where online information and digital learning should be a priority (Gértrudix et al., 2017) and which leaks through liquid spaces (Bauman, 2007; Santaella, 2010), MOOCs (*massive, open, online, courses*) thrive as free proposals open to the citizenship, introduced as innovative tendencies which make a significant impact on the evolution of e-learning. MOOCs are offered from various places around the world to anyone connected online at that moment and open to the co-creation (Ramírez-Montoya and García-Peñalvo, 2018) or joint construction of knowledge on behalf of a transfer scenario, which equally involves students and institutions. This new training model is based on learning strategies that “involve digitalization, ubiquity on online social media and the so-called web 2.0” (Aranda et al., 2014, p.13).

The MOOC training proposal is currently implemented following several approaches, whose main differences lie on the communicative and pedagogical model they are based on. Firstly, xMOOCs developed from a traditional approach based on conductist teaching, so that these courses share characteristics with traditional online learning, although adapted to the MOOC format (López de la Serna et al., 2018). Worth mentioning is also the cMOOC model, in which students are the ones creating and modifying contents, and thus developing learning networks such as the practice communities (Wenger, 1998). Its pedagogical reference is Connectivism (Siemens, 2005) and its open conception of participants’ interaction. Additionally, Fidalgo et al. (2016, p.3) introduce a model based “on the use of an X platform (for e-learning) and a C platform (eg. a social network), combining formal and non-formal learning activities (on the X platform) with informal learning (on the C platform) and cooperation among participants, in order to generate a continuous flow of knowledge between platforms”.

3. Materials and methods

The research method in this study builds on an analysis based on quantitative techniques and, therefore, is framed in empiric-analytical, rationalistic approaches or positivistic (Corbetta, 2007). It aims at the understanding of a social and educational phenomenon approached from the exploration of objective, empiric data. From this perspective, researchers are external and independent on their interactions with subjects. Neutrality is kept under scientific criteria in this study, thus revealing the laws governing certain educational and communicative phenomena, in order to draft and verify theories. Purposely, a survey has been chosen as research tool in the search of

information related to the targeted group (Sáez López, 2017). Such instrument was used for data collection, a well-known technique with which the great majority of the population is familiarized, in order to increase its outreach and provide a clearer answer from the sample, due to its clear, concise questions directly addressing the goals of the research, according to reliability and validity criteria. The survey was designed according to Likert technic's criteria, thus providing the subject with a clear statement (Murillo Torrecilla, 2006), and was properly validated by experts in quantitative analysis technics at Spain's National University of Distant Education (UNED).

In this study, we try to answer the following research question: To what extent do the MOOCs of the European ECO Project comply with a model that includes a commitment to participation, active learning and creativity?

The goals pursued by this research are as follow:

- Goal 1: To analyse the global outreach of European project ECO, under the inclusive precepts that characterize it.
- Goal 2: To assess the sMOOC proposal and its relation to student motivation as incentive for social commitment and in favour of inclusion.
- Goal 3: To evaluate the degree of satisfaction of participants concerning the training received and its level of adjustment to their specific needs, while following the sMOOC model.

The goals listed correspond to a study oriented towards the generalisation of results, approaching phenomena which are observable and susceptible to measurement, experimental control and statistical analysis. In this sense, they are coherent with the hypotheses formulated, which intend to be specific, precise and concise in their results, in order to facilitate the veracity in the concision of formulated conclusions and the study's neutrality, according to validity, reliability and objectivity criteria.

- H1: European project ECO has a global repercussion and is settling down in developing countries.
- H2: sMOOCs encourage interaction and participation, fostering a greater student's motivation and, subsequently, an impact on training for social inclusion processes.
- H3: Students participating in sMOOCs show satisfaction after the training received.

These hypotheses have been formulated and verified according to the reality studied in the collected data through a hypothetic-deductive method; they are related to the goals of the referred research. As far as the sample of the study is concerned, it comprises 1,361 people surveyed, which involved a significant number of participants in

ECO virtual learning community, along its five course editions, particularly concerning the sMOOC “Education Innovation and Professional Development. Possibilities and Limits of the ICTs”, which interacts in the various virtual spaces provided and thus holds a positive representativity, bearing in mind the digital scenario where it takes place. Participants in the sample may be considered average and represent every characteristic present in ECO Project education sector, in an adequate proportion to its variables. Such distribution is shaped as a Gauss Laplace curve (Martínez-González, 2007), which shows and equitable distribution within a scientific logic. Taking as a reference ECO project, with results previously confirmed in scientific spheres on various high-impact journals (Comunicar, Interactive Learning Environments, Educación XX1, Journal of Universal Computer Science or Mediterranean Journal of Communication) results are progressively more abundant and relevant. The study sets out from various subjects featuring different characteristics, and provides collective, accumulated information which allows a certain degree of external validity on the study’s data analysis. Consequently, all goals and each of the formulated hypothesis have been tackled and answers have been provided for each proposal. These questions have been observed from an educommunicational point of view, analysing the MOOC proposal as a mean for its development and, thus, breaking the course’s barriers and boosting non-linear structures, shown on multiple screens, thanks to participation and interaction in content. We have centred ourselves within the study scope, focusing on the research objectives and avoiding digressions in the execution process.

4. Results and discussion

As previously noted, the present study is based in the quantitative method. Such research proposal is particularly valued at studying a certain population sector and the obtained results may be inferred with a high degree of precision and reliability. In order to define the outreach of the introduced question and to suggest pertinent research proposals according to the Likert scale, researchers carried out a systematized search for information, asking subjects comprising the sample about the data they want to obtain, intending to provide an answer to the questions and hypotheses outlined. According to goals and hypotheses formulated, the analysis of results presents the study data and draws several conclusions. Purposely, the following categorized codes have been formulated and will be accounted for in the study, in order to classify the sample’s responses according to issues such as:

- Worldwide impact of training provided by European Project ECO.
- Fulfilment of personal goals set up previously to the training process.
- Active participation at a pedagogical and communicational levels in sMOOC’s didactic approach.

- Satisfaction regarding participation in ECO project's sMOOCs.

4.1. Students' profile

The profile of the 1,361 participants in the study sample, all of them members in the sMOOC environment learning community comprises features, as shown in Fig. 1, a majority of female students (52%) compared to male (45%). In addition, a significant percentage of participants (67%) are, as shown in Fig. 2, between 30 and 50 years-old, which reinforces data obtained in previous studies (Oliver et al., 2014). The analysis shows a low rate (11%) of students between twenty and thirty years of age. However, these latter data might be conditioned by the targeted audience of teachers, since the mentioned age brackets coincide with the period when they are college students and have not yet enter the labour market.

As observed, sMOOCs are yet to face the challenge of becoming a response to the demand for training among younger citizens who are not related to Higher Education and who could be subjects of social exclusion due to the lack of information, motivation to learn or a reduced or partial digital literacy. In this respect, Fig. 3 shows a significant 85% of participants with college education, thus proving that this training model, specifically as far as education innovation is concerned, is still limited to a highly educated social sector. In addition, it cannot be forgotten that, although there are no restrictions of access to the course, this is mainly aimed to teachers' training. The course's primary objective aims at increasing the teachers' professional abilities, achieving this way a reactive effect of improvement in the social layer, being teachers the quintessential social change agents.

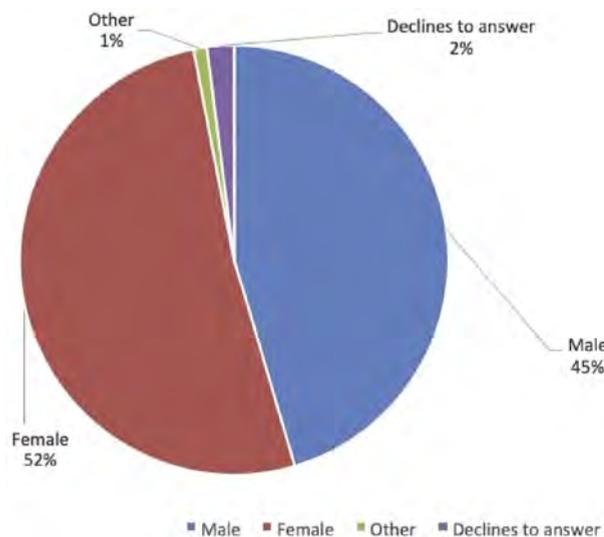


Fig. 1. Distribution of students by gender on each iteration.

Source: Compiled by authors.

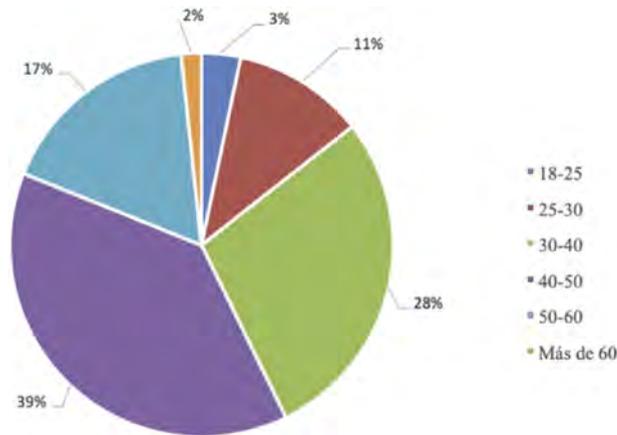


Fig. 2. Distribution of students by age on each iteration.

Source: Compiled by authors.

4.2. Worldwide impact of provided training

A significant training value to promote social inclusion is among sMOOCs' main assets (Monteiro et al., 2018), offering learning opportunities to millions of people regardless of their social or financial level and revealing itself as an open, innovative model (Osuna-Acedo et al., 2018a,b) with a worldwide impact. Massiveness, characteristic in this type of courses (Atenas, 2015; Gómez-Hernández et al., 2016; Sedano Cuevas, 2017), is partially confirmed in ECO's sMOOCs since, according to this study and as shown in Table 2, participants in ECO courses come from several countries around the world. The most represented nationality is Spanish (48.56%), followed by Portuguese (16.05%). Additionally, a significant number of enrolled students were based in France (5.41%), Italy (4.13%), Germany (1.29%), Austria (1.1%), Chile (0.5%) Estonia (0.1%), Hungary (0.1%) and USA

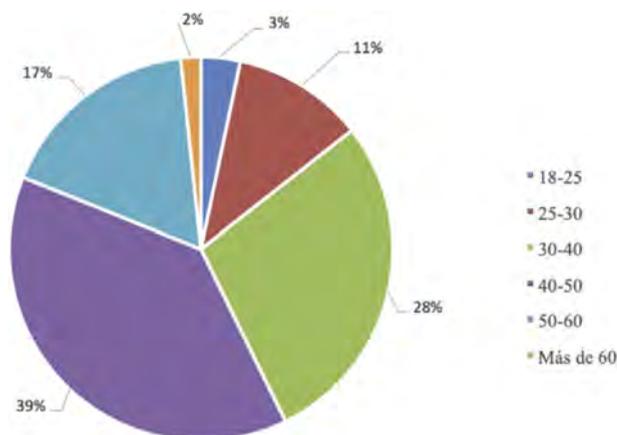


Fig. 3. Distribution of students by educational stage on each iteration.

Source: Compiled by authors.

Table 2. Distribution of students by country of residence on each iteration.
Source: Compiled by authors.

Country	%	Country	%
Spain	48.56	Bolivia	0.49
Portugal	16.05	USA	0.4
France	5.41	El Salvador	0.32
Italy	4.13	Madagascar	0.32
Brazil	2.79	Bangladesh	0.3
Mexico	2.64	Guatemala	0.3
Argentina	2.49	Togo	0.2
Peru	2.2	Tunisia	0.2
Colombia	2.15	Andorra	0.2
Venezuela	1.41	Zimbabwue	0.14
United Kingdom	1.33	Hungary	0.1
Germany	1.29	Estonia	0.1
Ecuador	1.17	Bulgaria	0.1
Austria	1.1	Chile	0.1
Dominican Rep.	0.6	Cabo Verde	0.1
Romania	0.6	Costa Rica	0.1
Senegal	0.6	Mozambique	0.1
Slovakia	0.6	China	0.1
Chile	0.5		

(0.1%). The innovative digital scenarios launched by universities (Cubebes and Riu, 2018) facilitate interaction and relation (Marta-Lazo and Gabelas, 2016) among the entire community of people with different continents, countries, cultures and languages (YeonJoo et al., 2017). Remarkably, a steadily growth of this kind of training is being observed in developing countries and it will undoubtedly contribute to the development of those societies where people have been forgotten (Silva-Peña and Salgado Labra, 2014; Oyo and Kalema, 2014). Our first hypothesis is therefore confirmed.

Moreover, sMOOCs could bring further benefits to developing countries because, somehow, their implicit participative model gives voice to minorities, otherwise traditionally relegated. On the one hand, they may be part of the global culture although unfortunately, on the other hand, all negative factors concerning the digital gap will put pressure on them, as they try to overcome their socioeconomic difficulties. Amidst the troubled conditions in developing countries, sMOOCs provide a ray of hope towards their international inclusion. Whether the contributions observed in this article become a reality on those countries or not, it will depend on their strength, openness, ideals, etc.

As shown in Table 2, as far as European countries are concerned, those with a longer tradition in MOOCs are also the most representative of the ECO project: Spain (48.56%), Portugal (16.05%), France (5.41%) or Italy (4.13%).

4.3. Degree of personal goals' fulfilment

The teaching team has chosen to empower students (Osuna-Acedo and Gil-Quintana, 2017; Osuna-Acedo et al., 2018a,b), making them feel protagonists and thus reversing the *participation funnel* (Clow, 2013) in the students' favour. Their interaction, participation and engagement to put what they have learned into practice in their respective social contexts has been positively developed in ECO's sMOOCs. As shown in Fig. 4, most participants questioned (95%) state that the course has a correct design, enables participation (Osuna-Acedo and Camarero-Cano, 2016), favours interaction and fosters students' engagement (Watted and Barak, 2018). The satisfaction rate among students about the opportunities provided by the course to develop creativity is also remarkable (95%). As shown in the figure, those assessments have been positively reflected along the sMOOCs' successive iterations, proving our second hypothesis correct.

4.4. Active participation at pedagogical and communicative levels

The pedagogical change that reinforces our second hypothesis' validity is developed, according to Fig. 5, through a series of didactic elements such as projects, tasks, resources, etc, as well as through the communicative nodes providing a participative approach to group work (Lawlor et al., 2018); methods such as peer assessment (Camarero-Cano and Cantillo-Valero, 2016; Osuna-Acedo and Gil-Quintana, 2017), participation on forum boards and posting on the courses' social media.

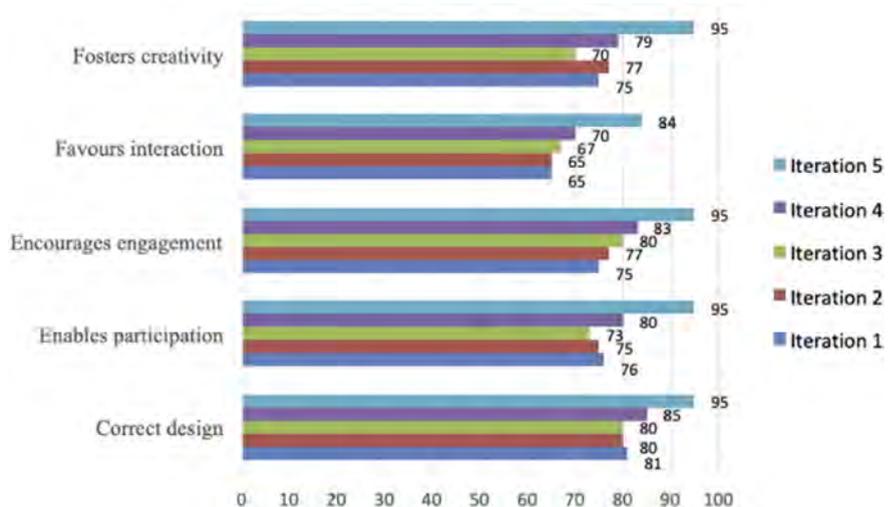


Fig. 4. Personal goals achieved on each iteration.

Source: Compiled by authors.

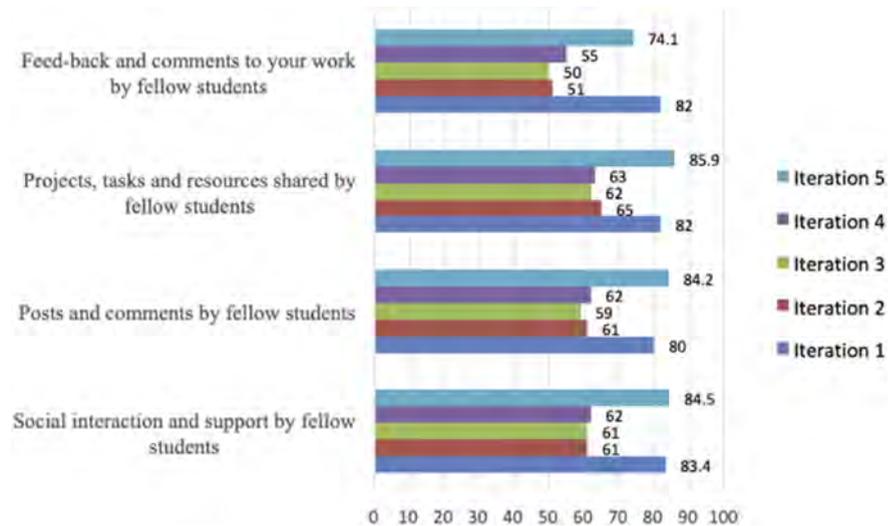


Fig. 5. Positive interaction among participants in the sMOOCs in the 1st, 2nd, 3rd, 4th and 5th iteration. Source: Compiled by authors.

From this Relational Factor, as well as intermethodologic (Marta-Lazo et al., 2016) access to various audiovisual productions is enabled, as shown in Fig. 3. Such resources are, in fact, MOOCs' most attractive products and, moreover, provide students with opportunities for empowerment within communication realities. As shown in the figure, the first and last iterations have been the best valued in this aspect (over 80%); while the second, third and fourth editions have scored lower rates; in the fourth iteration, in particular, the rate decreased significantly (50%).

4.5. Satisfaction regarding participation in ECO project's sMOOCs

In accordance to previous evaluations, results in Fig. 6 show how the first and last iterations obtained better assessment rates concerning tasks' design and distributions, both regarding collaborative tasks (81%, 48%, 58%, 62%, 86.4%) and individual tasks (89%, 60%, 65%, 93.4%). Under the same criteria, participants have assessed videos, documents and audiovisual materials more positively than the previous item but, once again, have valued the first and last iterations above all other (90%). Observing Fig. 3 it can be concluded that answers provided by the teaching team have an acceptable valuation (82%, 48%, 60%, 63%, 83%), proving again that ECO Project's teachers were concerned about establishing a better communication with the students. Finally, the less positive valuation refers to the platform's technical support (64%, 38%, 45%, 50%, 64%). Usability, however, was possibility assessed, as accessible to disabled people (72%, 52%, 65%, 70%, 89%).

The interest in positively assessing aspects related to the platform environment, pedagogical approach, personal goals and further didactic elements which have

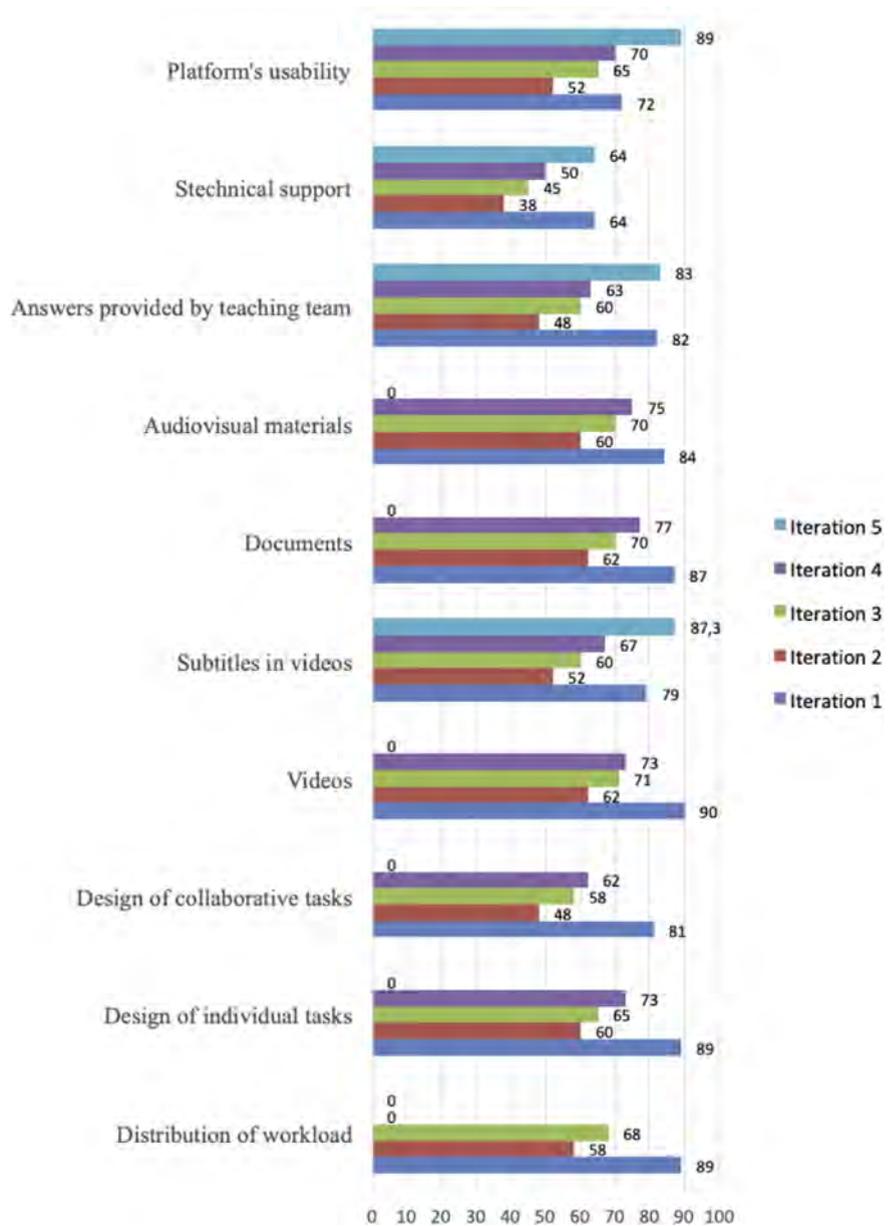


Fig. 6. Positive assessment to sMOOC in the sMOOCs in the 1st, 2nd, 3rd, 4th and 5th iterations.

Source: Compiled by authors.

made students part of the process, would not be real if it had not resulted from a satisfactory experience at completing the course, as shown in Fig. 7. Data obtained in the study show that members in the virtual learning community are satisfied with the training received (92%), thus confirming the last hypothesis formulated in our study. Such positive evaluation results from the work done by the team of teachers and facilitators, who strongly supported an attractive pedagogical approach and a horizontal and bidirectional communication model. These

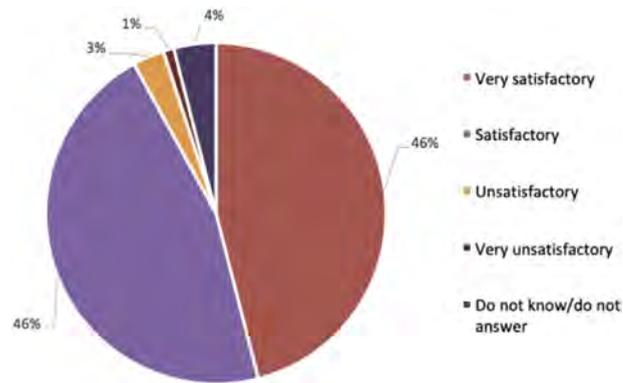


Fig. 7. General satisfaction with the sMOOC on each iteration.

Source: Compiled by authors.

results are consistent with previous research works (Gallego-Arrufat et al., 2015). These courses enable students' empowerment and the means to create their own sMOOC so that each participant becomes *webactor* (Pisani and Piotet, 2009) in the learning process, sharing and creating knowledge (Zapata-Ros, 2013) thanks to the intercreative environment generated from the transference-tMOOC (Marta-Lazo et al., 2018).

5. Conclusions

Los sMOOCs are globally consolidating as a training model for the promotion of people in risk of exclusion and an efficient mean to qualify mediating agents who will contribute to social transformation in deprived contexts. The massive character of sMOOCs has been enriched in several countries through ECO Project, which has brought an updated, high quality training approach to countries with population in risk of exclusion. This proposal's cultural enrichment portrays a virtual learning community based in the coexistence of diverse cultures and societies, promoting citizenship training aimed at its future empowerment and social commitment. The sMOOC model responds to the participating students, who positively evaluate this process of mediatic literacy and who feel active part in it, providing a fundamental satisfaction towards learning (Maartje et al., 2017) and the development of competency-based skills which may have a positive impact in society's layers.

The main limitations faced by this research lie in the difficulty of having speakers of six different languages interacting and using social networks as learning environments.

The new sMOOC proposal is presented as an alternative for updated citizenship training, whose members are motivated to take part in those learning processes developed in digital scenarios. Such is the approach promoted from ECO

European Project, which aims to construct teachers' communities of practice committed with socially excluded sectors and to encourage digital literacy in order to, subsequently, improve society. Therefore, citizenship will be granted options to participate and to empower structures, thus allowing a more democratic society. Nevertheless, while most students are satisfied with this model, some MOOC users do not like interactive approaches and prefer sequential and directed learning instead.

Teachers and further social agents, prepared for inclusion and for the eradication of the social gap through sMOOC training processes, are key to execute a social change towards inclusion in different societies, through citizens' empowerment. The pedagogical design of these courses adjusts itself, from a participative distribution, to different profiles of participants in the virtual learning community. Among them are the intermediate leaders or influencers, also social change agents, who interact as driving forces for the rest of interactors to react with tolerance to the frustration often generated by the learning process (Marta-Lazo et al., 2018). These authors highlight the role of intermediate leaders in the education process. Those are people included in the group of students who assume leadership, which involves responsibility not only towards their own learning, but also with the learning of their fellow students with whom they share the education platform. Intermediate leaders, who already played a significant role in traditional education, have become essential on e-learning environments. This model is somehow imported from social media, where the citizenship takes the floor to contribute to the culture of their time. Such digital inclusion, as a mean to incorporate equality of opportunities from childhood to old age, must be weighed and used by sMOOCs to put into practice those democratic principles needed to reinforce social justice and prevent it from being perceived as a mere illusion or an unreachable utopia.

As a future line of research, a qualitative study to contrast the data obtained is highly recommended. Such analysis should be structured around the tMOOC model as a method for the ethical formation of citizenship, with the purpose of preventing unwanted social behaviours, such as ideological radicalization or intolerance towards the different, in order to reach social inclusion.

Declarations

Author contribution statement

J. Gil Quintana, C. Marta-Lazo, S. Osuna-Acedo: Conceived and designed the analysis; Analyzed and interpreted the data; Contributed analysis tools or data; Wrote the paper.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

References

- Ainley, M., 2012. Students' interest and engagement in classroom activities. In: Christenson, S.L., Reschly, A.L., Wylie, C. (Eds.), *Handbook of Research on Student Engagement*. Springer US, pp. 283–302.
- Aranda, D., Creus, A., Sánchez-Navarro, J., 2014. *Educación, medios digitales y cultura de la participación*. Editorial UOC, Barcelona.
- Atenas, J., 2015. Modelo de democratización de los contenidos albergados en los MOOC. *Rev. Univ. Soc. Conoc.* 12 (1), 3–14.
- Bauman, Z., 2007. *Los retos de la educación en la modernidad líquida*. Editorial Gedisa, Barcelona.
- Camarero-Cano, L., Cantillo-Valero, C., 2016. La evaluación de los aprendizajes en los sMOOC. Estudio de caso en el Proyecto Europeo ECO. *Rev. Med. Comun.* 7 (2), 21–35.
- Cloutier, J., 1973. *Le communication audio.scripto-visuelle á l'heure desd self-media*. Les Presses de l'Université de Montreal, Canadá.
- Clow, D., 2013. MOOC and the funnel of participation. In: *Third Conference on Learning Analytics and Knowledge*, 8–12. Leuven. Belgium.
- Corbetta, P., 2007. *Metodología y técnicas de Investigación Social*. Mc Graw Hill, Madrid.
- Cubeles, A., Riu, D., 2018. La integración efectiva de las TIC en las universidades: el papel del conocimiento y la experiencia académica de los profesores. *Tecnol. Pedagog. Educ.*
- Downes, S., 2005. E-learning 2.0. *eLearn Magazine*, 17 October. Prieiga internetu. Available at: <http://www.elearnmag.org/subpage.cfm29-1>.

- Fidalgo-Blanco, Á., Sein-Echaluce, M.L., García-Peñalvo, F.J., 2016. From massive access to cooperation: lessons learned and proven results of a hybrid xMOOC/cMOOC pedagogical approach to MOOCs. *Int. J. Educ. Technol. High. Educ.* 13 (1), 1–13.
- Gértrudix, B.M., Borges, R.E., García, G.F., 2017. Redes sociales y jóvenes en la era algorítmica. *Telos* 107, 62–70. Available at: <https://en.fundaciontelefonica.com/publications/publication-details/itempubli/604/>.
- Gómez-Hernández, P., García-Barrera, A., Monge-López, C., 2016. *La Cultura de los MOOCs*. Editorial Síntesis, Madrid.
- Gallego-Arrufat, M.J., Gámiz Sánchez, V., Gutiérrez-Santiuste, E., 2015. Tendencias en la evaluación del aprendizaje en cursos en línea masivos y abiertos. *Educ. XX1* 18 (2), 77–96.
- Haste, H., 2017. *Nueva ciudadanía y educación: identidad, cultura y participación*. Paidós, Buenos Aires.
- Lawlor, J., Conneely, C., Oldham, E., Marshall, K., Tangney, B., 2018. Bridge21: trabajo en equipo, tecnología y aprendizaje. Un modelo pragmático para un aprendizaje en equipo efectivo del siglo XXI. *Tecnol. Pedagog. Educ.* 27 (2), 211–232.
- Lévy, P., 1997. *A inteligência colectiva. Para uma antropologia do ciberespaço*. Instituto Piaget, Lisboa.
- López de la Serna, A., Castaño Garrido, C., Herrero Fernández, D., 2018. Integración de los cursos SPOC en las asignaturas de grado. Una experiencia práctica. *Píxel-Bit. Rev. Medios Educ.* 52. Enero 2018.
- Macías, C., 2016. Las redes sociales como herramientas de aprendizaje. *Rev. Estud. Latinos* 16, 225–256. Available at: <https://dialnet.unirioja.es/servlet/articulo?codigo=5756066>.
- Marta-Lazo, C., Hergueta-Covacho, E., Gabelas-Barroso, J.A., 2016. Applying inter-methodological concepts for enhancing media literacy competences. *J. Univers. Comput. Sci.* 22 (1), 37–54. Available at: <http://goo.gl/XSH6Nm>.
- Marta-Lazo, C., Frau-Meigs, D., Osuna-Acedo, S., 2018. Collaborative lifelong learning and professional transfer. Case study: ECO European Project. *Interact. Learn. Environ.*
- Marta-Lazo, C., Gabelas, J.A., 2016. *Comunicación Digital. Un modelo basado en el Factor R-elacional*. [Digital Communication. A model based on the R-elational Factor]. Editorial UOC, Barcelona.

- Martínez-González, R.A., 2007. *La investigación en la práctica educativa: Guía metodológica de investigación para el diagnóstico y evaluación en los centros docentes*. Centro de Investigación y Documentación Educativa (CIDE). Madrid: Secretaría general técnica. Subdirección general de información y publicaciones, Madrid.
- Monteiro, A., Leite, C., Barros, R., 2018. *Eu ganhei mais o gosto de estudar: o e-learning como um meio de aprendizagem ao longo da vida de reclusas de um estabelecimento prisional português*. *Educ. Soc.*
- Mosher, R., McGowan, B., 1985. *Assessing Student Engagement in Secondary Schools: Alternative Conceptions, Strategies of Assessing, and Instruments*. University of Wisconsin, Research and Development Center, Wisconsin.
- Murillo Torrecilla, F.J., 2006. *Cuestionarios y escalas de actitudes*. Universidad Autónoma de Madrid, Madrid.
- Maartje, A., Henderikx, K.K., Marco, K., 2017. Refining success and dropout in massive open online courses based on the intention–behavior gap. *Dist. Educ.* 38 (3), 353–368.
- Oliver, M., Hernández-Leo, D., Daza, V., Martín, C., Albó, L., 2014. *MOOCs en España*. Cátedra Telefónica-UPF Social Innovation in Education. Fundación telefónica y Universidad Pompeu Fabra, Barcelona.
- Osuna-Acedo, S., Camarero-Cano, L., 2016. The ECO European project: a new MOOC dimension based on an intercreativity environment. *Turkish Online J. Educ. Technol.* 15 (1), 117–125. Available at: <http://www.tojet.net/articles/v15i1/15112.pdf>.
- Osuna-Acedo, S., Gil-Quintana, J., 2017. El proyecto europeo ECO. Rompiendo barreras en el acceso al conocimiento. *Educ. XXI* 20 (2).
- Osuna-Acedo, S., Gil-Quintana, J., Cantillo-Valero, C., 2018a. Open, mobile and collaborative educational experience. Case study: the European ECO project. *J. Univers. Comput. Sci.* 23 (12), 1215–1237. Available at: http://www.jucs.org/jucs_articles_by_author/Acedo_Sara_Osuna.
- Osuna-Acedo, S., Marta-Lazo, C., Frau-Meigs, D., 2018b. From sMOOC to tMOOC, learning towards professional transference. *ECO European Project. Comunicar* 55.
- Oyo, B., Kalema, B.M., 2014. Cursos online abiertos masivos para África por África. *Int. Rev. Res. Open Distrib. Learn.* Retrieved from: <http://www.irrodl.org/index.php/irrodl/article/view/1889/3127>.

Pisani, F., Piotet, D., 2009. *La alquimia de las multitudes: cómo la web está cambiando el mundo*. Paidós, Barcelona.

Ramírez-Montoya, M.S., García-Peñalvo, F., 2018. Co-creation and open innovation: systematic literature review. *Comunicar* 54, 9–18.

Reschly, A.L., Christenson, S.L., 2012. Jingle, jangle, and conceptual haziness: evolution and future directions of the engagement construct. In: *Handbook of Research on Student Engagement*. Springer, Boston, MA, pp. 3–19.

Sáez López, J.M., 2017. *Investigación educativa. Fundamentos teóricos, procesos y elementos prácticos*. UNED, Madrid.

Santaella, L., 2010. A aprendizagem ubíqua substitui a educação formal? *Rev. Comp. Tecnol.* 2 (1), 17–22. Available at: <https://goo.gl/BCz7hK>.

Sedano Cuevas, B., 2017. La atención a las necesidades y demandas específicas del alumnado en un mundo globalizado: el caso de un MOOC de español para viajar. *RIED. Rev. Iberoam. Educ. Dist.* 20 (1), 161–182.

Siemens, G., 2005. Connectivism: a learning theory for the digital age. *Int. J. Instr. Technol. Dist. Learn.* 2. Available at: http://www.itdl.org/journal/jan_05/article01.htm.

Silva-Peña, I., Salgado Labra, L., 2014. Utilización de MOOCs en la formación docente: ventajas, desventajas y peligros. *Rev. Curric. Form. Profr.* 18 (1). Available at: <https://www.ugr.es/~recfpro/rev181ART9.pdf>.

Soroush, V., Ded, R., Sinan, A., 2018. The spread of true and false news online. *Science* 359, 1146–1151.

Watted, A., Barak, M., 2018. Motivating factors of MOOC completers: comparing between university-affiliated students and general participants. *Internet High Educ.* 37, 11–20.

Wenger, E., 1998. *Communities of Practice: Learning as a Social System*. Systems Thinker. Available at: <http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml>.

YeonJoo, J., YouJin, K., Hikyoung, L., 2017. Learner perception of multimodal synchronous computer-mediated communication in foreign language classrooms. *Lang. Teach. Res.*

Zapata-Ros, M., 2013. MOOC, una visión crítica y una alternativa complementaria: la individualización del aprendizaje y la ayuda pedagógica. [MOOC, a critical view and a complementary alternative: learning individualisation and pedagogical assistance]. *Campus Virtuales* 2 (1), 20–38. Available at: http://eprints.rclis.org/25532/1/calidad_MOOC.pdf.