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Article

Joining Forces Toward Social Inclusion: Language MOOC Design for Refugees and Migrants through the Lens of Maker Culture

Maria Dolores Castrillo and Beatriz Sedano[1]

Abstract

The expansion of MOOCs (massive open online courses) is very much associated with instructors interested in the craft of teaching, innovating, and experimenting with different methods to improve and expand students' learning experience. The Erasmus+ project MOONLITE has worked to create cross-institutional scenarios and new educational pathways for migrants and refugees, devising, among other things, two Spanish language MOOCs (LMOOCs). They are the product of the joint efforts of university academics, non-governmental organizations (NGOs), and refugee support groups (RSGs), together with volunteers, refugees, and migrants, who formed a community in order to design courses that effectively addressed the needs of refugees and migrants arriving in Spain. Using a design thinking process, all parties involved attempted to collaboratively identify strategies and solutions to a given problem that might not be obvious upon first inspection; in this case, the specific linguistic needs of migrants and refugees arriving in a new country. Results show that this continuum of academics—NGOs/RSGs—volunteers—refugees/migrants was highly effective for the learners, with an overall completion rate in both MOOCs of 96%. The participants' perception is that these MOOCs helped them in their goal of integrating into life in Spain in key situations, such as communicating in a job interview or understanding the process of looking for accommodation and completing bureaucratic procedures.

KEYWORDS: MOOCs, LMOOCs, MAKER CULTURE, SOCIAL INCLUSION, DESIGN-BASED RESEARCH, REFUGEES AND MIGRANTS.

Affiliations

[1]Universidad Nacional de Educación a Distancia, Madrid, Spain.
email: mcastrillo@flog.uned.es
email: bsedano@invi.uned.es

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1. Introduction

It has been over a decade since the beginning of the MOOC (massive open online course) revolution, when it was suggested that such courses would contribute to the democratization of education by enabling access for learners from all backgrounds (Chafkin, 2013; Hollands & Tirthali, 2014; Littlejohn, Hood, Milligan, & Mustain, 2016; Pappano, 2012). However, the lack of impact of MOOCs on social inclusion and the scarce access to education for students from underprivileged environments are undeniable facts. In spite of some variation by course content, virtually all the studies related to the sociodemographic profiles of MOOC participants confirm the high socio-educational level of the students (Bozkurt & Aydin, 2015; Castrillo & Mañana-Rodriguez, 2017; Christensen, Steinmetz, Alcorn, Bennett, Woods, & Emanuel, 2013; Goldwasser, Mankoff, Manturuk, Schmid, & Whitfield, 2016; Laurillard, 2016, Neuböck, Kopp, & Ebner, 2015; Tovar, 2015):

> The demographics of massive open, online course (MOOC) analytics show that the great majority of learners are highly qualified professionals, and not, as originally envisaged, the global community of disadvantaged learners who have no access to good higher education (Laurillard, 2016, p. 1).

However, recent research (Aman & Santandreu, 2019; Lambert, 2020) points to a new line of contextualized MOOCs as a valid alternative to commercial MOOCs, one that would widen participation and help contribute to student equity and social inclusion. In this respect, the research presented here yielded promising results obtained within the Erasmus+ project MOONLITE related to participant performance and high social impact. The project has aimed at creating cross-institutional scenarios and new educational pathways for migrants and refugees, devising, among other things, two Spanish language MOOCs (LMOOCs) for immediate needs based on adaptability criteria with tutoring support and official recognition.

This recent expansion of MOOCs has been associated with instructors interested in the craft of teaching, innovating, and experimenting with different methods to improve and expand students' learning experiences. Hence, the two LMOOCs that are the focus of this article are the product of the joint efforts of university academics, non-governmental organizations (NGOs), and refugee support groups (RSGs), together with volunteers, refugees, and migrants, who formed a community in order to design courses that effectively addressed the needs of refugees and migrants arriving in Spain.

Furthermore, as Dougherty (2012) has pointed out, the Maker movement is about creating a community around skills that have often been practiced in isolation, and that is precisely what has been achieved in the design of the

two Spanish language MOOCs, "Puertas Abiertas: Español para necesidades inmediatas" (Open Doors: Spanish for immediate needs), levels I and II. In the introduction to their literature review of the Maker movement as an instructional process, Papavlasopoulou, Giannakos, and Jaccheri (2017) affirm that the Maker movement provides "limitless implications for the world of education" (p. 58). As will be shown here, our project fits well within the Maker culture approach to learning in this sense, as it gives learners the opportunity to have control over their own knowledge acquisition, setting them at the center of the educational process. Papavlasopoulou and colleagues (2017) conclude that despite the interest in the Maker movement and its connection to formal or informal education, the research concerning the opportunities it could present for education is scarce. Furthermore, a review of the current literature confirms that a Maker culture approach to learning has thus far been taken most notably in STEM (science, technology, engineering, and mathematics) curricular areas. Our project involved a challenge in the sense of incorporating a non-STEM area such as language teaching and learning, and specifically Computer Assisted Language Learning (CALL), into this Maker approach.

Using a design thinking process (Dorst, 2011), all parties involved attempted to collaboratively identify strategies and solutions to a given problem that might not be obvious upon first inspection. In this case, the problem was meeting the specific linguistic needs of migrants and refugees arriving in a new country: moving around the city, looking for a home, going to the doctor, understanding their civil rights, etc. Following a technology-based extension of do-it-yourself (DIY) culture, another angle of the Maker culture, the research hypothesis put forward in our project was that a continuum of academics—NGOs/RSGs—volunteers—refugees/migrants and the application of Maker culture would be highly effective in achieving a better-than-average completion rate in the LMOOCs.

In the next sections, we will briefly review the existing literature, discuss the process of designing the MOOCs, describe our research method, and report the findings. We will discuss these findings, in order to draw conclusions and suggest opportunities for future research.

2. Previous Work on MOOCs

2.1 MOOCs for Social Inclusion

Among the publications that deal with the potential integration of MOOCs as a tool for social inclusion, three papers stand out as relevant overviews of current research on that issue (Aman & Santandreu, 2019; Colucci, Castaño-Muñoz, & Devaux, 2017; Lambert, 2020). Lambert (2020) presents a systematic review of the literature that addresses the topic over five years (2014–2018) and

investigates the extent to which MOOCs provide equitable forms of online education. In a similar vein, Aman and Santandreu (2019) provide a "frugally-engineered MOOC model" (p. 3) which would address the barriers of access and participation for refugees.

According to Lambert (2020), the concept of social inclusion (along with others used analogously as "widening participation policies," "widening access," "fair access," and "student equity")

> is more typically used more broadly to refer to welfare policies targeted at unemployed adults who become disenfranchised from mainstream society. (p. 3)

This concern has gained special relevance due to the millions of forcibly displaced people around the world, with limited access and means to satisfy their basic needs. One of these basic needs is access to education (United Nations High Commission for Refugees [UNHCR], 2016), and consequently the European Commission (2018) has prioritized the issues that concern the promotion of and access to education, particularly in vulnerable contexts. It is against this backdrop that Lambert includes in his review the recent work of several researchers who considered the potential of MOOCs as a tool for social inclusion. The review examines 46 studies and reports covering over 440,000 disadvantaged learners in distance and blended learning environments. The author concludes that the educational programs supported by MOOCs and focused on student equity and/or social inclusion continue to be a global phenomenon of high interest and are an alternative global practice co-existing with other more "commercial" MOOCs (Lambert, 2020, p. 6).

Aman and Santandreu (2019) propose a "Frugal MOOC" model based on contextualization, which would adapt to the specific needs of refugee learners. In their work, they refer to evidence that poverty often results in a lack of educational opportunities. Consequently, the authors affirm that it is crucial to design and develop contextualized programs using affordable learning tools such as MOOCs. Based on the definition provided by Basu, Banerjee, and Sweeny (2013) of the concept of "frugal innovations" as "appropriate, adaptable, affordable and accessible" (p. 2), Aman and Santandreu (2019) see the need to develop a model for the design of "MOOCs without borders," adapted from the "Contextualised MOOCs Model" (Sha, 2020, as cited in Aman & Santandreu, 2019, p. 2), with the goal of greater inclusion of refugee populations. They highlight the adaptability to the context of displaced learners as a key aspect of this model.

Furthermore, other authors such as Castaño-Muñoz, Colucci, and Smidt (2018) had already conducted studies trying to investigate the extent to which MOOCs could be leveraged to help migrants and refugees develop the skills

they need for inclusion and civic integration. While the main finding of this study was that data on the impact of such initiatives are scarce, the authors identified some key aspects, which were highlighted as important for increasing the efficiency and effectiveness of these courses. These key aspects were mainly related to the instructional design: (1) it is important to provide guided instruction and offer tailored approaches; (2) related to this, these courses should enable personalized learning, since migrants and refugees are a very heterogeneous group with different backgrounds, and it is essential to address their specific needs. Furthermore, they reflected on the delivery mode, recommending blended learning contexts, arguing that face-to-face tutoring should not be replaced by online learning alone. It must be stated that this is one of the very few studies that specifically researches LMOOCs for refugees and migrants, as explained in the following section.

The underlying objective of MOONLITE (see Acknowledgments), the project that supports the present research, was also to explore the general suitability of MOOCs for social inclusion, and specifically for refugees and migrants (Traeger et al., 2018). In this case, three MOOCs have been developed: one so-called Meta-MOOC, since it is a MOOC that uses the format of these courses to actually present the research undertaken in this project, and two LMOOCs that illustrate how MOOCs can be designed, developed, and deployed for refugees and migrants' language learning, and whose results are presented in this article.

2.2 Language MOOCs for Inclusion

The acquisition of language skills, together with other related cross-cultural and intercultural skills, is among the keys to social inclusion and integration into a new environment for refugees and immigrants. As Colucci and colleagues (2017) state, "Language learning is a primary need for all migrant/refugee groups" (p. 25). Moreover, Bárcena and Martín-Monje (2014) maintain that LMOOCs can be considered as an adequate and effective tool to facilitate such acquisition due to their accessibility and openness. These authors claim that open online courses can be successfully designed to facilitate the development of communicative language competences.

Additionally, in their study carried out as part of the MOOCs4Inclusion project, Castaño-Muñoz and co-workers (2018) identify language learning as one of the three most common purposes of MOOCs for migrants and refugees. All the analyzed initiatives consider that learning the host country's language is the first step toward integration for migrants and refugees. The study shows that there is also a trend toward offering a Content and Language Integrated Learning (CLIL) approach (Coyle, 2007) that facilitates language learning through the acquisition of relevant content. Among the analyzed initiatives, the

authors include Kiron, ReadyforStudy, and LASER, all of which offer courses catered to the needs of different refugees in different settings, some building on the MOOC concept, others taking a blended learning approach, and they also consider the CLIL approaches. Following Read, Sedano, & Bárcena (in press), the problem with using a CLIL approach in the case of the MOONLITE project lies precisely in the low target language competence of refugees and migrants, thus making it difficult to teach the language effectively using only a content-based approach. For this reason, the MOONLITE project utilizes approaches based on foreign language learning methodologies rather than CLIL.

As we have seen, there is a body of growing literature and a continuing interest related to the effectiveness of MOOCs as tools for social integration through education. To date, however, the existing literature and research related specifically to LMOOCs as tools for social inclusion are practically non-existent, apart from the publications associated with the MOONLITE project. We agree with Castaño-Muñoz and colleagues (2018) in their statement that research, impact assessment, and coordination on this topic has only just begun.

Within the CALL field, previous research points to the suitability of sociocultural approaches, especially in non-formal settings, as is the case presented in this study (e.g., Lamm, 2003). Warschauer (2005) highlights the relevance and usefulness of Vygotsky's contributions to understanding how sociocultural theory can be applied to CALL, in particular the notion of mediation, one of the three main aspects of Vygotskian thought. In this project, the "tools or mediational means" put forward by Vygotsky are achieved by applying the Maker approach to the creation of the MOOCs. We also approach theories of later sociocultural theorists, for whom mediation would rather include the activities that people carry out when assisted by tools.

Given the scarce research on LMOOCs for social inclusion, and with the findings of the literature review in mind, the ATLAS (Applying Technology to LAnguageS) research group saw the need to identify specific criteria related to technology, methodology, language, and culture and policy, which would need to be taken into account in the development of LMOOCs for refugees and migrants. The next section describes how the tenets of the Maker culture informed these processes.

3. Maker Culture and the Steps Toward a Language MOOC for Social Inclusion

The ATLAS group determined that a design-based research (DBR) approach was the most appropriate for tackling this project. According to Anderson and Shattuck (2012), DBR has the following characteristics, which fit our needs perfectly for the LMOOC design: (1) being situated in a real educational context;

(2) focusing on the design and testing of a significant intervention; (3) using mixed methods, involving multiple iterations; (4) involving a collaborative partnership between researchers and practitioners; (5) evolution of design principles; and (6) practical impact on practice. As such, this DBR approach was adopted, and the group carried out an exhaustive analysis of the profiles and needs of refugees and migrants in Spain (Traeger et al., 2018). For this analysis, and for the entire design process of the LMOOCs, we relied on the postulates of the Maker movement in education (González-González & Aller, 2018). Attracted by the socio-constructivist and collaborative pedagogical approach that this movement puts forward, we found it the most appropriate way to identify the distinct needs of this group and carry out the design according to them. Up until now, we had created LMOOCs without getting the other stakeholders involved in the process. However, on this occasion, we truly embraced the ideal of creating a community that would work and "Make" together from start (needs analysis) to finish (course delivery), a community that ranged from university professors (applied linguists, educators, and computer engineers) to NGOs, RSGs, volunteers, and refugees and migrants.

Thus, the research group decided to join forces with the different stakeholders mentioned above and promote the creation of a community of designers made up of a team of university professors, members from different NGOs and RSGs located in Madrid (Spain), refugees and migrants themselves, and other volunteers. In this space, following the constructionist approach that characterizes the Maker culture, the teachers did not work in isolation, but instead used a design thinking process (Dorst, 2011), so that all the agents involved in the process collaborated on the identification of the specific linguistic needs of migrants and refugees arriving in a new country, and worked on the design and development of the MOOC materials. Thus, the whole process benefited from a wide range of ideas and approaches of the different stakeholders, which came together in the created community space (Dougherty, 2012) to create a more complete and comprehensive product than would otherwise have been possible.

The contents of each course were divided into four independent situation-specific modules (see Table 1), with materials focusing primarily on audio-visual components (videos, audios, images, infographics, etc.). Course activities were based on self-evaluation and peer-to-peer activities, while the forums and social networks served the social aspect of the language courses. The courses were designed to be completed in a period of six weeks, and to be undertaken either autonomously or by following a blended approach (Read et al., in press) with an intact class.

The LMOOCs were developed against the backdrop of social inclusion throughout their design, elaboration, and implementation phase. The fact that the refugees themselves were the actors in many of the videos provided a

Table 1
Table of Contents for Open Doors I and II

Course I	**Module 1**	Introductions, administration, and bureaucracy
	Module 2	Routines and daily life
	Module 3	Travel and moving around
	Module 4	Going to the doctor
Course II	**Module 1**	Leisure time and socialization
	Module 2	Looking for housing
	Module 3	Training and employment
	Module 4	Defending rights

feeling of belonging to our eclectic community of MOOC creators, as well as serving to reinforce their self-esteem. Adopting a technology-based extension of DIY culture (González-González & Aller, 2018), the course design process went through six stages of development, as will be discussed in more detail below. The six-step design was based on an extensive collaboration of all the parties involved: end-users and stakeholders (higher educational institutions, NGOs, and support associations) (Read et al., in press).

1. We contacted local NGOs and support groups in Madrid (Spain), in order to perform a needs analysis to determine where the greatest needs lay in terms of linguistic and cultural information needed by migrants and refugees.
2. The NGO teachers asked for online support in their Spanish language classes, which prompted the decision to create two LMOOCs focusing on the daily needs of migrants and refugees.
3. University professors within the MOONLITE project identified criteria which should be met by socially inclusive MOOCs, all included in five categories: technology, linguistics, pedagogy, culture and ethics, and institutional policy.
4. It was decided that NGOs and volunteer refugees would select the contents.
5. NGO teachers and university professors jointly decided the structure of the LMOOCs, taking into account the limitations imposed by the technology we had freely available.
6. NGO teachers developed the course materials, university professors acted as quality supervisors and coordinators, and most of all the stakeholders (teachers from NGOs, university and migrant students) participated as actors in the videos created as learning resources. The main benefit of

applying the DIY approach in the design of the LMOOCs was that we were able to utilize the full resources available.

For the first step in the process, the ATLAS research group organized two collective meetings/workshops with around 20 local and national associations that support refugees and migrants in Spain, in order to present the project and collect information from the actual involved stakeholders. During the first meeting, qualitative data on refugees' and migrants' real needs were collected through a survey, interviews, and informal talks with the representatives from these associations. In a second meeting, some design principles criteria for effective LMOOCs were presented by LMOOC experts from the ATLAS research group on the basis of previous research, and the team decided to start with two LMOOCs covering basic and intermediate Spanish for immediate needs. Then, during a workshop held with the Spanish teachers from NGOs, the structure and content of the courses were decided, following the design thinking process previously described. Finally, during the course of several months, the research group, teaching teams, volunteers, and students worked collaboratively (using Google Drive, face-to-face, online collective, and individual meetings) on the design of the course structure and materials. These were constantly supervised by the academics, with the purpose of quality assurance.

Once the courses had been designed, the following steps were carried out: first, the materials and activities of both courses were implemented on the UNED MOOC platform "Open UNED"; second, the research team piloted the courses with some groups of refugee and migrant students, and re-adapted some of the materials according to the results of the piloting; finally, the first edition of the courses was launched and developed from January to April 2019, with a duration of six weeks each. The courses were advertised through the refugees' and migrants' support groups contact list, and the Spanish teachers from these groups informed their students directly. Also, the course availability was announced via a national radio station, in the Spanish Ministry of Foreign Affairs' blog, and in several social networks (e.g., Facebook).

4. Analysis and Findings

This section presents the analysis of the data collected through four instruments: (1) direct observation; (2) learning analytics tools; (3) questionnaires; and (4) interviews. After the description of data analysis and the preliminary conclusions, we discuss how the instruments allowed for a brief triangulation of the data to highlight the effectiveness of the collaboration established between all the stakeholders.

4.1 Direct Observation in the Pilot Phase

After the design of the course materials and activities and their implementation on the platform, and before the launch of the first edition of the courses, we carried out a pilot test of some modules, with the aim of checking the adequacy of the adopted methodology, as well as the accessibility and usability of the platform. This process was developed at two of the support associations, where teachers were involved as materials designers with three different groups of students, for a total of 18 people. These students were chosen due to their heterogeneous profile, since this was one of the main characteristics of the refugee and migrant population that was highlighted during the needs analysis. The students were originally from different countries (Armenia, Afghanistan, Burundi, Ghana, Nigeria, Jamaica, Syria, and Sudan), spoke different mother tongues (Arabic, English, African languages), represented a range of ages, and represented a range of literacy levels in Latin script/Roman alphabet, as well as different levels of digital literacy and familiarity with digital competencies. The students worked in the different modules of both courses over a total of 20 hours and tried different types of course activities, using desktop computers, laptops, and their own mobile phones. This pilot phase allowed for several key observations.

We identified a number of pedagogical issues, such as the need for more audio-visual content, owing to some students' low level of literacy or reading difficulties. Therefore, we decided to record more audio and include more images, so that the text-based material would have more audio-visual support and less explicit grammatical content (see Figure 1). In addition, it became evident that the most preferred activities were the audio- and video-based ones, followed by a verification test. It was also noteworthy that whenever the contents focused solely on reading or listening comprehension, students did not know what to do. As a consequence, we modified the activities to include a brief test or comprehension check to accompany each piece of content (see Figure 2).

The pilot stage was also useful in identifying different learning styles and different types of potential participants. For example, we observed that some learners finished very quickly, while others stopped at each activity, taking notes, looking up the meaning of words, etc. While students in any class are likely to display these different approaches, the self-paced autonomous nature of MOOCs require that extra attention is paid to this aspect of learning in the presentation and sequencing of content. Also, there was a tendency among the older students to want printed content or to expand on the grammar information provided in the course. Therefore, for those students who wanted to deepen their knowledge, we created optional extended lessons with grammar, lexical content, and suggestions for practice outside the individual course or

Figure 1. Example of course content with image and audio support: "Greetings."

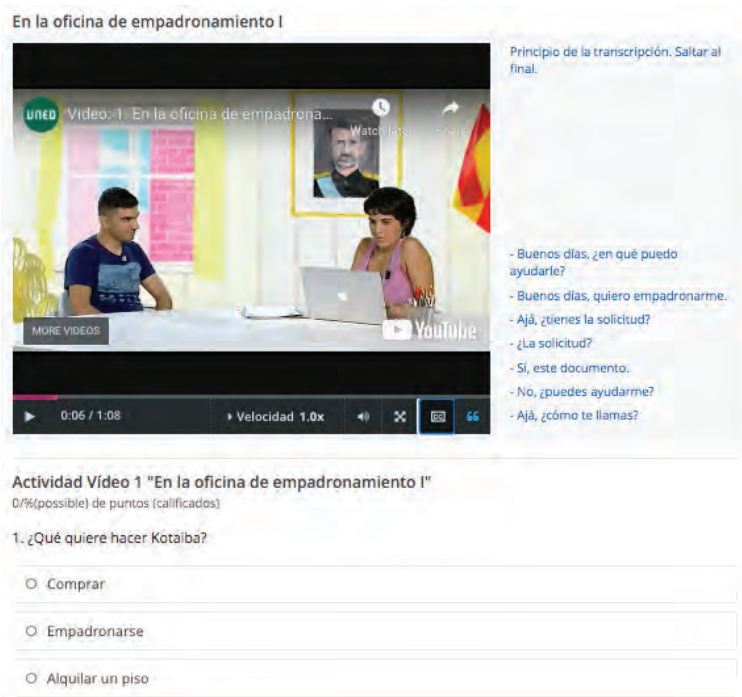

Figure 2. Example of activity with video and self-evaluation test: "At the census office."

with colleagues or friends. In addition, we included the whole course content and activities on PDFs, so that they were available to download and print on demand.

This "downloadable" aspect of the course is related to technical issues detected in the process, since we discovered that the Internet connection available in refugee and migrant support centers could also generate difficulties when loading images or audio files. Therefore, every audio file and every image was reviewed and converted to low resolution, and videos and audios were made available for download, so that they could be listened to or watched offline. Also, with regard to the technological aspects of the platform, although most users knew how to navigate effectively, we observed some difficulties; for example, in knowing how to look for particular content, how to activate the videos' subtitles or transcriptions, or how to submit completed tests. Therefore, we created a technological and pedagogical guide, consisting of nine short video tutorials explaining different course aspects, such as module structure; how to watch a video or listen to an audio; how to send a test or carry out a peer-to-peer type activity; how to participate in a forum, etc. In this way, we made the course more accessible to all learners, regardless of prior experience with digital materials.

Finally, we also identified sociocultural and inclusion elements in the pilot phase. For example, what students seemed to like most was to see themselves identified in the videos, so some materials were modified to include more diversity in the participants, and to represent a wider range of nationalities. Additional languages were also added to the list of available subtitles for the video tutorials and transcripts, and a glossary of course vocabulary, in order to provide more scaffolding with consideration of beginner students.

In summary, the piloting phase was extremely useful, especially in two primary aspects: (1) to corroborate that the contents and materials developed in the collaborative design process between the stakeholders were adequate, useful, and practical for the potential students; and (2) to make the necessary adjustments to provide better scaffolding and enhanced diversity and inclusivity.

4.2 Quantitative Data from the Platform's Learning Analytics Tools

The learning analytics tool of the MOOC platform provided additional quantitative data, some of which were also useful in allowing the team to assess the success of the project. These data included information on the number of participants enrolled, the success rate (i.e., the number of participants who passed the course), and the number of participants who were active and carried

out assessable activities. This information is important in order to understand the completion rates, and it also helped to situate the success of this program within the broader context of MOOCs in general.

According to the data extracted, in the first edition of the courses, 2,252 participants were registered in Open Doors I, and 1,233 in Open Doors II. Of the registered participants, 702 and 461 passed the courses, respectively, and could opt for the certificate, which in both cases represents 31% of those registered (see Figure 3). Although at first glance these figures may seem low, it is important to recognize that for most MOOCs the completion rate is usually between 2% and 12.5% (Henderikx, Kreijns, & Kalz, 2017). In that light, our 31% completion rate indicates a significantly higher rate of retention and success. Delving deeper into the data provided by the platform, we can also point out the success rate of active participants, namely, those who completed more than one task. In the case of the first course, 717 participants completed more than one task and 702 passed the course, so the results rate rises to 98%; while in the second course, 596 participants completed more than one task and 461 passed the course, delivering a success rate of 77% (see Figure 4). In addition, it is possible to measure the average success rate of students who completed the assessable activities (e.g., self-evaluation or test-type activities). This rate was 97% for the first course, and 95% for the second.

With regard to evidence of learning, quantitative data from the final task of every module in both courses—which consisted of a machine-graded test of linguistic and cultural aspects—showed an average of 98% of correct answers. In summary, then, the quantitative data described here reflect the success of the course design, as these completion rates indicate that the participants were

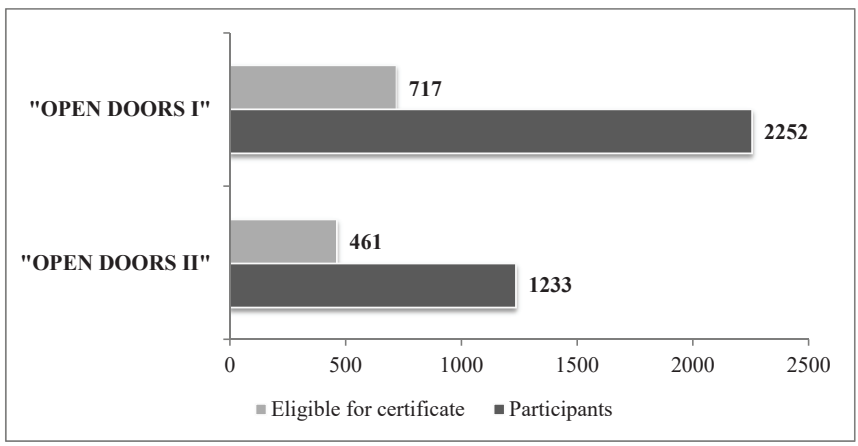

Figure 3. Overall completion success rate of Open Doors.

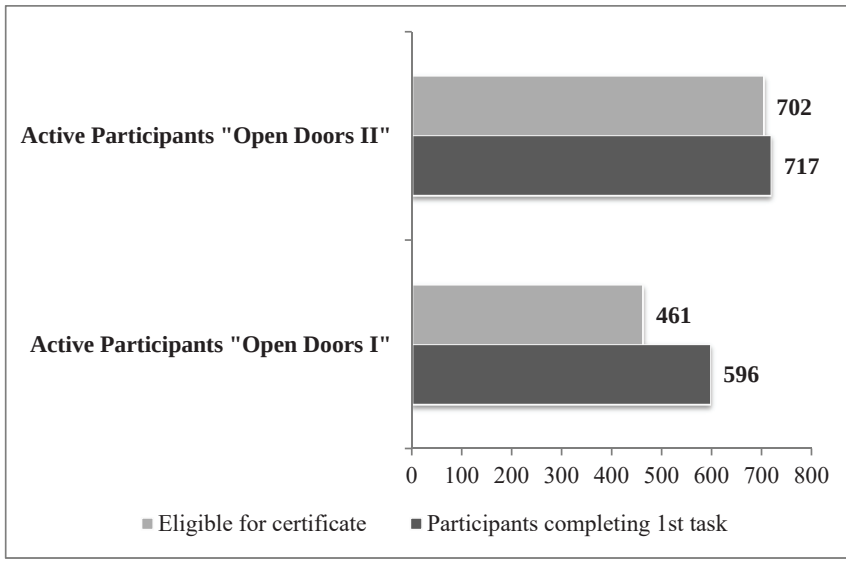

Figure 4. Active learners in Open Doors.

engaged with the material and confident in their learning. We believe that this success is a reflection of the effectiveness of the course design, which we attribute to close collaboration process among the Makers in the design community.

4.3 Qualitative Data from Questionnaires

Two questionnaires were included in each course, an initial one at the beginning of the course, in the first module (https://forms.gle/baqDZMLNQtkvjq36A, in Spanish), and a final one at the end of the final module (https://forms.gle/d2E6TXFGNSDAgW2Q6, in Spanish). As the courses are MOOCs and all modules were open from the beginning, both questionnaires were available for response throughout the duration of the course. Combining the responses from participants in both courses, the initial questionnaire was answered by 798 participants, and the final one by 1,231. From the initial questionnaire, the demographic data revealed that we were able to achieve the desired target audience. More than 75 nationalities were represented, among which the most common were: Moroccan (16%), Russian (7%), Ukrainian (5%), Senegalese (4%), Malian (4%), Cameroonian (4%), Brazilian (4%), Indian (2%), and Syrian (1%). Similarly, participants spoke a large range of native languages, such as Arabic (20%), French (20%), English (16%), or Russian (11%). In terms of where participants were when they completed the course, 87% of the respondents were in Spain or intended to arrive in Spain shortly; with regard to those

already in Spain, most of them had been in the country for one (63%) or two years (19%), with the intention to stay for more than three years (55%). In addition, 60% of respondents were unemployed and around 55% indicated that their Spanish level was basic, and they also indicated a desire to improve that. In sum, these data show that the target audience for these courses was recent or new refugees and migrants, who required basic language and cultural skills—in other words, the exact population we hoped to reach. Covering such a wide range of participants would not have been possible if the course creators had not worked collaboratively to create the necessary synergy between stakeholders.

In the final questionnaire, most of the participants confirmed the usefulness of the course in fulfilling their daily objectives (97% in the two courses combined), as well as other aspects that helped with the inclusion process in the country of arrival: completing bureaucratic procedures (66%), searching for housing (67%), and improving their job search process (70%) were the most commonly mentioned benefits. These results confirm the effectiveness of the cooperative design thinking process in developing course topics that were most relevant and useful for the target population. In addition, in the final forum where participants were asked about their own perception of the course outcomes, they offered many positive comments, revealing a general impression of improvement in their communication skills in Spanish. They were especially grateful for the special attention that had been paid to their specific needs, as can be seen in the following illustrative examples (translated into English).

> Example 1: Thank you very much for the course, I love that you care about interculturality and the sensitivity of the users; if you do a third level, I will do it again, greetings!

> Example 2: Hello, I learned a lot about the Spanish society and my rights and duties, thank you very much.

With regard to the participants' opinions of the materials and activities, most of the resources were rated as high quality by a large number of participants—videos (74%), test-type exercises (71%), PDFs (70%), audios (69%), cultural notes (68%), and extension resources (68%)—which is consistent with what was indicated in the piloting phase and reflects the importance of Maker culture combined with DBR for the success of the course materials. We believe that these high success and satisfaction rates are a direct consequence of this collaborative approach. We formed a community that involved and engaged all stakeholders in the design of the courses, from the joint needs analysis to

the design and development of materials and the delivery of the course. That empowered us to collaboratively identify strategies and solutions, in order to solve the specific linguistic needs of migrants and refugees who arrive in a new country. We made the course together, and discussed every single step of the design process, thus combining the postulates of Maker culture and DBR. The result was a powerful team, who brought together a range of expertise and lived experiences to create LMOOCs that catered to the interests and needs of the target population.

With regard to the supporting and scaffolding resources included in the course, the most valued were the course guide with the video tutorials (86%), the texts of the videos (84%), the glossaries (82%), and the video subtitles in Spanish and other languages (63%). These support materials were also identified by the participants as factors that had most motivated or helped them through to the end of the course (60%), together with the presence of tutors in the forums (38%), an aspect that had been given particular consideration, as a team of 15 facilitators (volunteers) had been trained for each course in order to encourage, support, and resolve students' questions with much more personalized attention and more participation and support than in other MOOC courses. For instance, taking the example of forum participation, in the first course 1,647 messages were posted, which can be considered as high for a beginners' level LMOOC with refugee and migrant students (Bárcena, Read, & Sedano, 2020). All the above confirm the importance of the collaboration of refugees and migrants themselves in the pilot and design phases, and the participation of volunteers who provided the human side of the course.

If we pay attention to the linguistic skills acquired or improved in the course, according to the participants' own assessment, reading comprehension (66%) occupies first place, followed by listening comprehension (63%) and improvement in oral expression (62%), and was due to the course content being based on learning the necessary functional structures for specific communicative situations. Based on this, participants assessed the achievement of their learning outcomes as follows: to communicate in a job interview (70%); to be able to look for a house (66%); to provide personal data (65%); to defend their own rights (61%); or to get by in the doctor's office (60%). Once again, these positive perceptions could possibly be due to the participation of the refugees and migrants themselves, as well as their teachers, in the design thinking process, since they had the final decision as to the communicative content of the courses.

In addition, the teaching and facilitation team also completed a final questionnaire. Their perceptions can be seen as a product of the joining of forces. For example, teachers highlighted the usefulness of the courses as support/reinforcement resources for their face-to-face classes, due to the close

relationship of the courses' content to their classes and the practical, action-oriented approach, as mentioned above. Also, they pointed out that students in their classes expressed their satisfaction about the courses in terms of realizing that their knowledge was being reinforced, and that their identities were represented in the course materials.

With regard to the team of facilitators, they noted several positive aspects as a result of the effective collaborative design process: accessibility and clarity/simplicity of materials and activities; the adaptation to their specific needs and practical orientation; and the scaffolding/support provided by the materials and the tutoring of the course. With respect to participants' performance, facilitators highlighted the positive atmosphere created within the forum, the significant involvement, and the interest and effort shown.

As a final data point, and in order to expand upon the responses to the questionnaires, we carried out in-depth interviews with some members of the teaching team.

4.4 Interviews with Members of the Teaching Team

A total of seven teachers agreed to respond. The main goal of these interviews was to assess the effects of the multi-member collaboration throughout the design process. We used semi-structured interviews with a script of predetermined questions (see the Appendix), which was open to include additional follow-up or ad hoc questions (Cohen, Manion, & Morrison, 2011). The interviewer had a certain flexibility with regard to the order and formulation of the questions. The reason for choosing this typology was to obtain answers oriented toward some concrete objectives and aspects for the triangulation process, but also to remain open to wider reflections by the interviewees.

To begin with, the teachers were asked if they considered that the creative process utilized in the two courses fitted into what is known as the "Maker" cultural movement, which is associated with the democratization of knowledge and with demonstrating that anyone can be a creator. In this respect, all the respondents agreed that this was the case and highlighted that collaboration between stakeholders was crucial, as each one of the parties had contributed with their knowledge and their experiences, thereby opening up the process of creation to everyone. Crucially, the creative process was also open to the refugees and migrants themselves, despite not being pedagogy specialists. In this respect, the democratization of learning was indeed made possible by making the learners themselves protagonists from the point of view of creation.

In addition, some of the teachers said that democratization of learning was facilitated in other ways: the opportunity to learn the language; the development of digital competence; and their education as active citizens (e.g.,

by learning to defend their civil rights). Furthermore, this democratization benefits the organization's face-to-face classes by providing free educational support, but also by offering free official certificates for those completing the courses. This was possible due to a special agreement with the university offering these LMOOCs, since the project was aimed specifically at the target group of displaced people.

With respect to participation in the six steps of the design process, respondents were asked to comment on which aspect of the process had generated the most collaboration between the stakeholders. All interviewees agreed that the final step, the focused creation of materials, was most collaborative. They specifically noted that the recording of the videos with and by the students themselves was a truly inclusive and empowering experience. Many of the other steps were also deemed collaborative, although not to the same degree as the sixth step. Three of the teachers interviewed, who participated in the pilot phase, also corroborated the importance of the pilot phase in shaping the final version of the courses, such as the consideration of some students' reading and writing difficulties; the improvement of the accessibility and usability of the courses; and the confirmation of the content's adequacy for the level, profile, and interests of the participants.

4.5 Triangulation of Methods, Data, and Resources

This triangulation is based on the comparison of the various data collected through the different instruments and the different sources, as described above. It allows the following conclusions to be drawn, which allow us to confirm the effectiveness of the union of forces and the Maker culture approach examined in this study.

First, the success of the courses in accommodating the learners' profiles and meeting their objectives was corroborated by the diverse types of data collected: by the positive feedback during the pilot phase; from the participants' profiles and perceptions drawn from questionnaires, where 97% confirmed the usefulness of the courses for their lives and a high opinion of the materials and activities; and by the teaching team's responses in questionnaires and interviews, which identified adaptation to the needs of displaced people as the key to success.

The importance of scaffolding and support materials for successful completion of the courses was also confirmed by comparing the data. This was first noted in qualitative data from the pilot phase, and later corroborated by the questionnaires and interviews, where both participants and students emphasized the significant assistance provided by these resources; and further

by the high completion and success rates provided by quantitative data from learning analytics.

Finally, the success of the Maker culture approach and the stakeholders' collaboration in the whole process was also highlighted by our data triangulation. For instance, qualitative data from the pilot phase and course questionnaires showed the positive effect of learners identifying with the profiles represented in course content, which was only possible thanks to the participation of refugees and migrants with the help of teachers from the support associations. This insight also arose during the interviews, where teachers identified collaboration, learner inclusion, and democratization of the creative process as the key aspects in the success of the whole learning process.

5. Conclusion

In spite of the popularity of MOOCs, there are still gaps in our understanding of their implementation and success. For example, Reich (2015) recommended more domain-specific MOOC research, in order to identify best teaching and learning practices, while Aman and Santandreu (2019) noted that so far there has been little scholarly research on how MOOCs can be used in the fragile and difficult context of forcibly displaced people. Furthermore, Lambert (2020) stated that open education programs focusing on the refugee crisis are scarce, and recommended additional attention and research related to inclusive design and pedagogy. This study has attempted to address some of these gaps by demonstrating the success of employing the tenets of the Maker movement to develop effective LMOOCs for refugees and migrants. By following a DBR process and a technology-based extension of DIY culture within the Maker culture movement, the Open Doors project developed courses designed to help refugees and migrants adapt to their new homes.

Overall, our findings indicated that the collaboration between all the stakeholders was highly effective and crucial to the success of the design process, with an overall completion rate in both MOOCs of 31%, and for the active learners of the course (those that completed at least one task) a success rate of 98% in the first course, and 77% in the second. The participants' perception was that these LMOOCs were useful for their learning of Spanish, and that the course helped them to achieve their goal of adapting to life in Spain. Specifically, according to the exit survey, they noted that the course material was beneficial in key situations, such as communicating in a job interview, understanding the process of looking for accommodation, or completing bureaucratic procedures.

In this study, we have shown that collaboratively developed LMOOCs can be an effective means of providing access to education for refugees and migrants,

and helping them to solve the problems of language barriers while adapting to their host community. The success of the Spanish LMOOCs developed in the context of the MOONLITE project lies in the joined forces of all the stakeholders, including the end-users, in providing the complementary know-how, skills, competences, experiences, and resources (Read et al., in press). By contributing these findings, we hope to further the advancement of work in this area, and to have opened up new paths to social inclusion.

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About the Authors

María Dolores Castrillo holds a senior lecturer position at UNED, teaching and researching in the areas of German studies and CALL (Computer-Assisted Language Learning). Member of the ATLAS (Applying Technology to LAnguageS) group; her current research interests include MOOCs (Massive Open Online Courses), Open Educational Resources (OERs), Computer-Mediated Communication, Mobile Assisted Language Learning (MALL) and Social Networks for Language Learning. Her publications include papers in indexed journals and book chapters both at national and international level. She has won two prizes related to Open Learning: Best Open CourseWare (2008) and Best MOOC (2013), both awarded by the Spanish Ministry of Education, Universia (Banco Santander) and Telefónica. Also, her research practice has received official recognition; and her PhD thesis was awarded the Prize for Doctoral Excellence.

She has participated in seven competitive European and national research projects and five projects based on art. 83 LOU, for the transfer of R&D to the productive sector, the last of which, as the main researcher, carried out under an agreement between the UNED and Telefónica Educación Digital.

Since 2016 she has been coordinating the GLOBE Innovation Group (Group for Languages in Open and Blended Environments) that has obtained four financed innovation projects related to open teaching and learning, and data-driven language learning.

Beatriz Sedano has a PhD in Education and Treatment of Languages through the ICT doctoral program at UNED on LMOOCs (Language MOOCs). Since 2017, she has been working at UNED as contracted research staff associated with European Erasmus+ projects, such as MOONLITE (https://moonliteproject.eu/), ECCOE (https://eccoe.eu/), and NEXUS (https://nexus4civics.eu/). She is member of ATLAS (Applying Technology to LAnguageS) research group and the teaching innovation group GLOBE (Group for Languages in Open and Blended Environments), in which she has participated in several projects related to Computer-Assisted Language Learning (CALL) and Mobile Assisted Language Learning (MALL). She has also participated in numerous national and international congresses and has published papers in indexed journals and book chapters both at national and international level. Her research focus is on language online learning, particularly on open education, instructional design, and LMOOCs.

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Appendix

Questions for the Interviews with Members of the Teaching Team

1. The "Maker" culture is a cultural movement associated with the democratization of knowledge and showing that we can all be creative. Do you think that the process of creating the Open Doors MOOCs, with the collaboration of university/NGOs and refugee/volunteer/migrant and refugee support groups can fit into this movement?
   YES/NO
   —If the answer to the above question is YES, in what way?
   —If the answer to the previous question is NO, why not?

2. The design of the two Open Doors MOOCs has had six steps. Please indicate which of these steps has been the most collaborative among the four actors (university/NGOs and refugee/volunteer/migrant and refugee support groups): 1. Contact with NGOs and refugee support groups; 2. Needs analysis; 3. Developing criteria for inclusive MOOC; 4. Thematic selection for MOOCs; 5. Structure of the MOOC; 6. Creation of materials.

3. Have you participated in piloting the courses with refugees and migrants?
   YES/NO
   —If the answer to the above question is YES, how do you think piloting has influenced the final version of the courses?