## Pronunciation improvement in MOOCs: an unavoidable challenge

#### Victoria Marrero-Aguiar

This article is focused on the challenges posed by the development of oral production skills (including pronunciation) in a Massive Open Online Course (MOOC), a resource that is totally conditioned by the technologies and has very limited possibilities for individual adaptation. First, the difficulties that this goal poses are reviewed and confronted with some successful precedents that show how to deal with those challenges. Next, we present a case study in which some strategies and resources have been used to develop oral skills and improve pronunciation in technologically mediated environments, a Spanish L-MOOC for migrants and refugees, absolute beginners, developed at UNED (Spain).

**Keywords:** speaking, pronunciation, oral skills, Spanish as a Second Language, linguistic integration of migrants and refugees, Mobile Assisted Language Learning, Language-MOOC.

La mejora de la pronunciación por medio de MOOCs: un reto ineludible. Este trabajo aborda los retos asociados al desarrollo de las destrezas de producción oral (incluyendo la pronunciación) en un recurso tan condicionado por las tecnologías y tan difícil de personalizar como un curso online masivo y abierto (MOOC). En primer lugar, se plantea una reflexión sobre las dificultades que ese objetivo plantea y se describen algunos precedentes de éxito que demuestran que, de una manera u otra, estos desafíos ya se han abordado. A continuación, presentamos un estudio de caso en el que se han utilizado algunas estrategias y recursos para desarrollar las habilidades orales y mejorar la pronunciación en entornos mediados por la tecnología, un L-MOOC español para inmigrantes y refugiados, principiantes absolutos, desarrollado en la UNED (España).

Palabras clave: producción oral, pronunciación, español como segunda lengua, integración lingüística de migrantes y refugiados, aprendizaje de lenguas mediado por ordenador, curso online masivo abierto para la enseñanza de lenguas, L-MOOC.

#### 1. Introduction

MOOCs (Massive Online Open Courses) are educational resources that have increased exponentially in the last years, reaching in 2020 180 million learners, 16.3 thousand courses, 950 universities, and 67 MOOC-based degrees from providers all over the world (https://www.classcentral.com/ report/the-second-year-of-the-mooc/), and the Covid-19 pandemic has only increased that trend (Sun 2020, Flores Tena 2020). The main knowledge areas in which MOOCs are offered are Computer, Business and Science (Health Sciences during 2020), but Language MOOCs (L-MOOCs) are more and more frequent. We may wonder if these courses, with their fixed structure, are an adequate tool for learning a foreign language. If we look at previous experiences, the answer will depend, to some extent, on the skills we focus on. For perception skills (oral comprehension and reading), grammar and vocabulary, MOOCs offer great advantages: plenty of audiovisual stimuli, complementary explanations and materials, as many cloze tests as desired... But for language production (written and, especially, oral skills) the difficulties are much greater, as will be shown in the following pages.

In this article, some ways to face the challenges derived from the development of oral production skills (speech, pronunciation) in the MOOCs are presented. In the next section, the difficulties inherent to MOOC characteristics are reviewed and confronted with some successful precedents in courses aimed at migrants and refugees that show how to deal with those challenges. After that, methodological aspects will be addressed, the strategies and resources needed to develop oral skills in a technologically mediated environment, with a quick review of those developed in the context of UNED (Universidad Nacional de Educación a Distancia, Distance Learning University in Spain). In the main section, we will present our own proposals for Spanish pronunciation teaching by means of MOOCs, especially in Puertas abiertas: curso de español para necesidades inmediatas, a course for migrants and refugees, absolute beginners. We will conclude by relating our results to those obtained by previous studies, and by proposing ways to address the challenges of technology-mediated pronunciation teaching.

# 2. The challenge to develop oral production skills in L-MOOCs. When the addressees are migrants and refugees

"Real language acquisition develops slowly, and speaking skills emerge significantly later than listening skills, even when conditions are perfect" (Krashen 1982: 7)

Engaging actively in a conversation is, in most cases, the primary goal and the hardest task when learning a foreign language. To achieve it, the learner needs to express ideas, feelings or personal views and, at the same time, to understand those of his/her partner. Oral skills (listening and speaking) require a highly demanding set of cognitive processes.

The complexity of learning to speak in another language is reflected in the range and type of subskills that are entailed in L2 oral production. Learners must simultaneously attend to content, morphosyntax and lexis, discourse and information structuring, and the sound system and prosody, as well as appropriate register and pragmalinguistic features. [...] The key metacognitive strategies widely adopted in L2 listening instruction include planning for listening, self-monitoring the comprehension processes, evaluating comprehension, and identifying comprehension difficulties [...]. Learners at beginning and intermediate levels of proficiency may benefit from instruction that concentrates on bottom-up and top-down listening processes, together with selective strategy training. For more advanced learners, an addition of cognitive strategies, such as discourse organization, inferencing, elaboration, and summation, also represent an effective approach to teaching listening (Hinkel 2006: 114-119).

Consequently, learners frequently feel unconfident about their achievements in these concatenated skills.

One theme that emerged consistently from both the students' and the instructors' comments was students' lack of confidence, whether in their listening abilities, their fluency, or their pronunciation. Students appeared convinced that they could not understand their instructors, that their native-English-speaking peers were irritated by them, and that their own speech was unintelligible." (Ferris 1998: 310-311).

The reasons for such difficulties are heterogeneous. Apart from the aforementioned psycholinguistic processes, there are also cultural variables, arising from the complex pragmatic rules that regulate the conversational exchange in every speech community, with different timing for turn-taking, and different hierarchical roles for each participant. Other difficulties have their roots in the educational tradition: it has not always been encouraged the active participation of the student in the classroom. Finally, the individual personality is an important factor in this regard: shyness, shame embarrassment for making mistakes, etc. are also variables that explain the phenomenon (Tanveer 2007, LeVelle & Levis 2014).

In the context of a one-to-one conversation, or a face-to-face class, the training on oral production skills can be done in many ways: questions and answers between teacher and students, pairs' conversations, small groups discussions, short individual dissertations or presenta-

tions, etc. In the context of Computed Assisted Language Learning (CALL) this is much more complex, because of the inherent asynchronicity in the communicative process in self-paced learning, which implies a delay in the feedback provided by the teacher and classmates. But when the vehicle used for releasing the teaching materials is the mobile phone (MALL), and especially in a Massive Online Open Course (MOOC), the above circumstances add up to a very high number of students with very diverse profiles (Estebas-Vilaplana & Solans 2020). Therefore, individual training or assessment, even asynchronous, becomes unattainable.

And, last but not least, our specific meta group poses an added challenge. Learning the new language for migrants and refugees is a means to achieve other purposes (first of all, survival), not a goal in itself; their attendance to the course will be conditioned by many external factors that result in a low attending rate (OECD/EC 2015). Some of the learners can use this course as a complementary resource for their face-toface classes once they arrive in their destination country, but many others can access it from everywhere, far from a situation of immersion. Their access to the required infrastructure (connectivity, mobile phones quality...) can be poor. And their previous social, educational and cultural background also can be very diverse, as well as their age, their literacy level, their attitudes towards learning a new language, and even their mother and following (2nd, 3rd.) languages, in most cases not enough known in our context. Spain is receiving an increasing number of asylum applications (almost 100,000 in 2020, according to UNHCR, https://data2.unhcr.org/en/documents/details/83974), mostly from Spanish-speaking countries, but also from Ukraine, Mali, or several sub-Saharan countries. However, as we will see below, the language resources to address the needs of asylum seekers in Spanish do not seem to be receiving the same attention as those in other European languages.

Despite all the difficulties mentioned above, there are previous experiences that have achieved reasonable success in the development of language skills for migrants and refugees by means of MOOCs. Probably the most ambitious and well-known experience in their use for the access of migrants and refugees to the university is the Kiron Open Higher Education, whose motto is "Open Higher Education for Refugees. Kiron enables access to higher education and successful learning for refugees through digital solutions". They define themselves as "a service provider in the field of education and tech that helps refugees to start or continue their studies with online courses" (https://kiron.ngo/navigator/global/what-kiron-is-not/). The Kiron Language School offers, in English, German and French, "language courses in various digital formats, including virtual classrooms, online live-teaching sessions, etc.", as well

as traditional face-to-face classes. Those MOOCs are hosted, in general, on platforms as EdX or Coursera. The last one, on its page http://refugees.coursera.org, recommends appropriate courses for refugees, and also a procedure to apply for financial aid.

The project Moocs4inclusion (http://moocs4inclusion.org) was directed in 2016 by the Joint Research Centre of the European Commission with the aim of "assessing the adequacy (mapping and analyzing) of Massive Open Online Courses (MOOCs) and Free Digital Learning (FDL) for inclusion of migrants and refugees". Its main research question was "Are MOOCs and other free digital learning offers (including free mobile learning) effective and efficient ways for developing the skills needed by migrants and refugees for inclusion, integration, re-engagement in formal or non-formal education (e.g. via recognition of learning outcomes), employability and civic participation?" In the final report, the authors recommend "initiatives that take a 'blended' (online and face-to-face) and 'facilitated' (support services and mentoring) approach" and "found that language learning is a firstpriority intervention for the general migrant and refugee community. Language learning and civic integration-related initiatives are commonly linked and the concept of 'Content and Language Integrated Learning' (CLIL) is gaining momentum" (Colucci et al. 2017: 5-6). Aside from the above, the project's web page offers also a complete (and increasing) catalogue of digital and free resources for the integration of migrants and refugees.

In the Council of Europe frame, it is noteworthy the Erasmus+ Online Linguistic Support for Refugees (https://erasmusplusols.eu/ols4refugees/); it does not offer MOOCs, but blended or online courses in more than 20 European languages, six of them (Spanish included) from levels A1 to C2 of the Common European Framework of Reference for Languages (CEFR). In the field of language policy, the Linguistic Integration of Adult Migrants (LIAM) Project aims at offering support to facilitate migrants' linguistic integration in civil society; apart from various surveys, they launched, in November 2017, the Language Support for adult refugees: a Council of Europe toolkit (https://www.coe.int/en/web/language-support-for-adult-refugees/home), with 57 tools ranging from ethical and intercultural issues to L1 descriptions (Arabic, Kurdish, Somali or Persian), recommendations to develop different skills, and several didactic units. It is important to note that the page is offered in seven languages, but not in Spanish. In this context, the MOONLITE Project (Ref.: 2016-1-ES01-KA203-025731) is framed, whose objective is "Learning, support and certification without frontiers. Harnessing the potential of MOOCs for refugees and migrants to build their language competences and entrepreneurial skills for employment, higher education, and social inclusion" (https://moonliteproject.eu/). Co-funded by the Erasmus+ Programme, MOONLITE offers, under the line "MOOC for integration and language courses", an important added value providing materials for Spanish as a new language with the aim to provide linguistic and transversal skills to refugees and migrants for their social inclusion and employability (Castrillo & Sedano 2021; Read & Bárcena 2021; Read, Sedano & Bárcena 2021).

Having outlined the challenges we face in using MOOCs for language training of migrants and refugees, and mentioned some initiatives that have addressed them, we will move on to the methodological issues, with a brief review of the strategies and resources that have been used in the broader context of computer-assisted instruction to develop oral skills in a foreign language.

#### 3. Methodology

### 3.1. Strategies and resources for the development of oral skills in technology-mediated environments

Computer Assisted Language Learning or, more specifically, Mobile Assisted Language Learning have faced the challenge of developing oral skills in a context where face-to-face interaction is not possible, even before the arrival of MOOCs. There are plenty of references to experiences or research on the use of synchronous computer-mediated communication environments: videoconferencing (critical reviews by Coverdale-Jones 2000, or Yousef, Chatti & Schroeder 2014); use of social networks (Lomicka & Lord 2016; Reinhardt 2017); specific learners communities, in platforms as Busuu (Álvarez Valencia 2014), italki (Beaven, Fuertes Gutierrez & Motzo 2017) or LiveMocha (Lin, Warschauer & Blake 2016); or tens of language learning apps (review in Gangaiamaran & Pasupathi 2017).

Thus, the success of the new (or not so new) technologies in the field of second language learning seems to be proven. Within the UNED, and in the MOONLITE- ATLAS team, many initiatives have been carried out in this field (García Riaza et al. 2013). In the development of listening skills, apps as the following have been developed: Audio News Trainer for English (ANT; Pareja Lora et al. 2013; Bárcena & Read 2015; Read & Bárcena 2016); VIdeOs for ListeNing (VIOLIN, Talaván & Ávila-Cabrera 2015); FAN CLUB (Friends of Audiobook Network), or EATING OUT, considered "not an app in itself, but rather a teacher resource for listening comprehension and communicative practice"

(Arús-Hita 2016). It uses language samples from a radio broadcast and other audio files or video clips. The kind of activities that students can do are automatic quizzes or questions with 'sample answers' (Castrillo, Bárcena & Pareja-Lora 2014). The authors recognize that the focus on oral comprehension is "mainly due to the fact that assessing and/or automatically correcting activities regarding [...] other skills is much more complicated than assessing oral comprehension" (Castrillo, Bárcena & Pareja-Lora 2014: 44). Certainly, the assessment is a difficulty to be solved when dealing with production skills in technologymediated learning materials, but evaluation is only a part of the learning process. Focused on speaking, in the app VIdeos for Speaking (VISP, Ibáñez, Vermeulen & Jordano 2016) the task for the learner (B1/B2 level of CEFR) is to describe a short video clip as if they were explaining the scenes for visually impaired people. The student records him/herself (listening and repeating if needed) and sends the record to an email address; at that time the student can access a self-evaluation section, where he or she finds a model answer (oral and written) and some thought questions (in open and closed format). Future improvements could include, according to the authors, the use of social networks and a wiki for sharing and commenting on the audio files.

More recently, the use of chats, or, specifically, automatic chat systems (bot chats) have generated a remarkable interest in foreign language learning, even compared with human interaction (Frier et al. 2017). In their review, Golonka et al. consider "proved that with chat, both the amount of learners' language production and its complexity significantly increased. The literature also revealed moderate support for a number of other claims, such as demonstrating pretest-posttest gains in speaking [...] and fluency; enhancing L2 speaking proficiency" (Golonka et al. 2014: 88).

In the narrowest field of pronunciation, many resources offer to the student articulatory or acoustic feedback, that is, schemes of the position of articulatory organs during the production of sounds and audio files. An interesting point is the role of automatic speech recognition technology in foreign language learning; it is quite usual to find systems that automatically assess the learner's utterance recording with simple feedback (a number, a colour code, an evaluative adjective). The accuracy of these systems and their flexibility are always under review, and depends, to a big extent, on their capacity for continuous improvement. For the pronunciation of Spanish, some apps have also been developed to encourage self-learning by the learners (Carranza 2014). When considering the relevance or pronunciation for migrants and refugees, the Council of Europe considers that "they probably understand the importance of pronunciation, which adults

often find one of the most difficult aspects of language learning (Council of Europe 2017, Tool 11: 1)".

In the next section, we will consider which of these tools can be included in a Language MOOC and how to adapt them to the predetermined structure that characterizes these courses.

#### 3.2. Oral production skills in L-MOOCs

The MOOCs focused on language learning, also known as L-MOOCs, give a very unbalanced role in oral skills for perception and production. Most of their learning materials and activities are based on videos that require continual listening comprehension tasks (even if subtitles are frequently available). On the other side, oral production is reduced, generally, to "listen and repeat" exercises, strongly structured and absent of any feedback, or even a basic self-assessment rubric. These practices ignore the effect of the "phonological deafness" (Guberina 1931) suffered by language learners during the process of the new language acquisition, especially by adults (Dupoux and Peperkamp 2006): "the concept of phonological deafness, first proposed by Petar Guberina and incorporated to the verbotonal method for phonetic correction (Renard 1971), alludes to the difficult, or virtually impossible, task that listeners face when trying to recognize a phonetic difference based on an acoustic distinction that is not relevant to their own L1" (Lahoz 2012: 142). In the best-case scenario, students record themselves (audio or video) as part of a peer-to-peer (P2P) assessment task (Bárcena, Read, Martín-Monje & Castrillo 2014), but students participated in this activity much less than in the rest of the scheduled activities.

In an exception to this general pattern, Rubio (2015), in a specific L-MOOC on Spanish pronunciation, compared the improvement in a face-to-face course and a similar L-MOOC. He modified the standard structure of a MOOC by creating assignments in which students recorded themselves pronouncing a text they had previously heard from a native speaker, then sent that file to the course teachers, and received individual correction guidelines. The results showed that

"The format of this LMOOC was effective in providing students with the necessary tools to improve their level of comprehensibility. The analysis shows that, although both groups made significant gains after instruction, the LMOOC students showed a much larger effect size. The most immediate and general conclusion that can be drawn from the results is that the absence of face-to-face interaction and the large enrollment in the course did not prove to be an obstacle for acquisition" (Rubio 2015: 160).

The key element for this success was, according to the author, the quantity and quality of individualized corrective feedback, both instructor and peer generated.

Unfortunately, this personalized attention from teachers cannot be provided in general L-MOOCs, such as those offered to migrants and refugees, where teacher support is limited, didactic objectives go beyond pronunciation, and enrollment is very high. That is why our goal was to create, within a general L-MOOC, some progressive pronunciation modules, which would start by focusing on the perception of sounds (to deal with the phonological deafness), and then move on to production, so that the learners could autonomously build their learning process. The results will be shown in the following section.

#### 4. Results

## 4.1. First experience. Oral production skills in Spanish L-MOOCs for foreign language learners

Considering the previous experiences, in the spring of 2015, we have tried to offer in a MOOC a didactical sequence of oral activities that begins with a perceptual training, in which pairs of stimuli are contrasted, to avoid or minimize the effects of phonological deafness increasing the consciousness of the student to the acoustic characteristics of the new language. In the L-MOOC Español en línea UNED-ELE. Nivel B1. Bloque 1. Prensa y cine ("Spanish online UNED-ELE. Level B1. Block 1. Press and cinema") the first pronunciation activities consist of a perceptive training that allows comparing minimum pairs, as the intonation of two sentence modalities (statements versus questions) that can be seen in the following screenshot (Figure 1). In this first activity, we use not only audio stimuli (in the two main dialectal macro-varieties of Spanish, the American and European), but also visual information of the corresponding tonal curves (obtained with Praat software, Boersma & Weeninck 2013), which shows very clearly the contrast of patterns between both structures. The stimuli, in this task and all the didactical sequence, were real audios from a commercial film trailer, in its version for Spain and Colombia. Other exercises, like the one shown above (Figure 2) contrast absolute interrogatives with pronominal interrogatives (wh- questions).

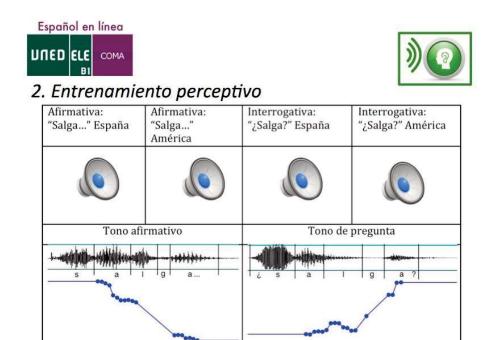


Figure 1. Screenshot of the first perceptual training exercise in the L-MOOC Español en línea UNED-ELE. Nivel B1. Bloque 1. Prensa y cine

The next step was a discrimination task shown in the image below, in which the learner has to decide if the audio file presented is a question or an assertion. The complexity of grammatical structures is increasing from the first to the last audios, and absolute questions and wh- questions are presented (image 2).

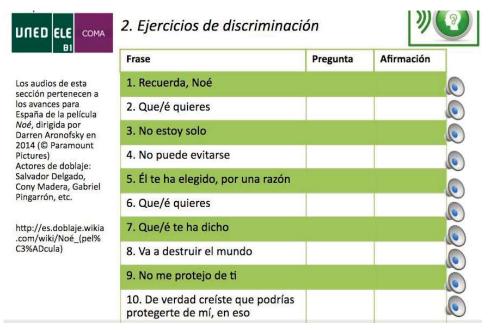


Figure 2. Screenshot of a discrimination task in the L-MOOC Español en línea UNED-ELE. Nivel B1. Bloque 1. Prensa y cine

At this point, the learner can be prepared for the last task, the oral production and comparison with the model, always with the help of the visual tonal curve (Figure 3).



#### 3. Pronunciación



Escucha, observa y repite. Cuando estés preparado, puedes grabar tu propia pronunciación de las frases siguientes

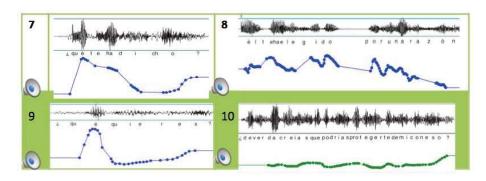


Figure 3. Screenshot of a production task in the L-MOOC *Español en línea UNED-ELE. Nivel B1. Bloque 1. Prensa y cine.* Instructions: "Listen, observe and repeat. When you are ready you can record your own pronunciation of the following phrases"

Unfortunately, the platform on which this course was set up ceased to be supported after a short time, and we were never able to get statistics on its results.

#### 4.2. Pronunciation activities in Puertas Abiertas MOOC

Four years later, our team developed two new MOOCs for migrants and refugees, *Puertas abiertas. Curso de español para necesidades inmediatas* ("Open doors. A Spanish course for immediate needs") (I) and (II), in the frame of MOONLITE Project (see above, section 2). The technological criteria to facilitate the usability and accessibility of the course were, among others, a responsive design, adequate for mobile phones, simple navigation, images and videos in low resolution, and the possibility of downloading every material. From the pedagogical, intercultural and linguistic perspectives, special attention has been paid to the simplicity of expression (mainly visual and not so dependent on writing), basic level of language, the diversity of identities in materials

and activities considering non-Eurocentric learning styles, as a way to foster intercultural awareness and competence. The courses so far have two editions, one in spring 2019, and another in spring 2020. We will now comment on the results of the first edition, which had 2365 students enrolled for the first part and 1299 for the second part.

Our previous experience, together with the technical and didactic peculiarities that this new MOOC presented, made us decide to carry out five new pronunciation activities, including a P2P (peer-to-peer) assessment task, for *Puertas abiertas*.

In the first part of the course (*Puertas abiertas-I*) we began with intonational contrasts, as in the previous MOOC. The learner receives multimodal information, both acoustic-auditory and visual (waveforms and tonal curve, highlighted with red arrows), and the same sound stimuli that have been presented in previous activities of this module (see Fig. 4). The activity ends with a minimum pair discrimination task (question/statement).

In the second part of the course (*Puertas abiertas-II*) the first activity is dedicated to the vowels. As in the previous exercise, the auditory information is reinforced with visual cues, the pronunciation feedback is related to the grammatical contents that have been addressed in the unit (in the box of Figure 5), and the activity ends with a discrimination task.

The suprasegmental level not only deals with intonation (with another exercise like the one presented in Puertas Abiertas-I) but also with stress, providing visual feedback along with auditory feedback (with audios taken from other exercises of the unit), as shown in Figure 6. The final discrimination test presents stimuli of increasing difficulty.

After performing this series of exercises, at the end of the third module (the penultimate of the course), students were faced with the most complex task in the MOOC: an oral presentation for a job interview, subject to peer-to-peer evaluation. To adjust the difficulty of the task and provide a homogeneous, provide a reliable correction rubric, and prevent the dissemination of protected personal data, the interview was not free, students had to choose an avatar (among 3 women and 3 men) and prepare the interview with the previous data of that character, which were provided in the instruction page (see Fig, 7). The following script with the structure of the recording was also provided: "Good morning, my name is [indicate name and surname]. I have studied at [indicate the data you entered in *Training*]. I have experience as [indicate data in *Professional experience*]. I speak [indicate data from *Languages*]. I am very interested in this job, and I am willing to learn. Thank you. I look forward to hearing from you. Goodbye."

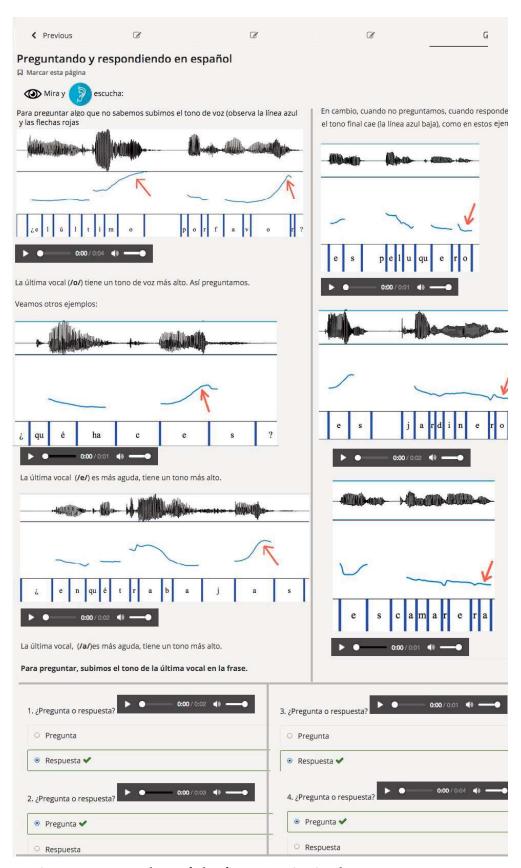


Figure 4. Screenshot of the first exercise in the L-MOOC Puertas abiertas. Curso de español para necesidades inmediatas

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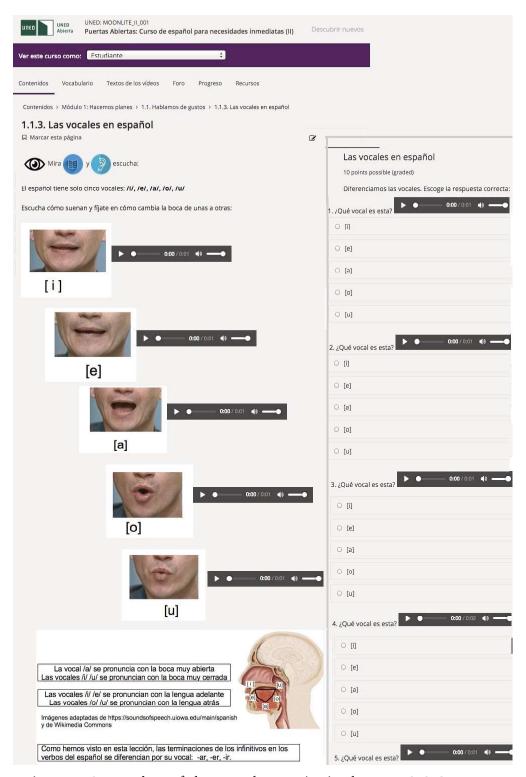


Figure 5. Screenshot of the vowels exercise in the L-MOOC Puertas abiertas. Curso de español para necesidades inmediatas.

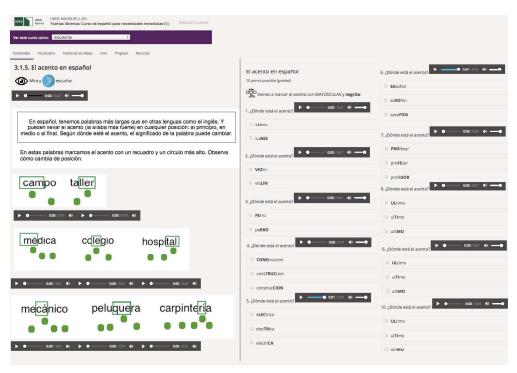


Figure 6. Screenshot of the stress exercise in the L-MOOC Puertas abiertas. Curso de español para necesidades inmediatas.



Figure 7. Screenshot of the P2P exercise in the L-MOOC Puertas abiertas. Curso de español para necesidades inmediatas.

The guidelines in the evaluation section were as follows: "We will give a maximum of 2 points to the following aspects. If the criterion is met only in part, or grammatical errors are observed, we will lower the score to 1 or 0. Select the table that corresponds to the character your partner has described. If none of the proposed characters have been described, the activity cannot be evaluated". Below appear, in Spanish, six tables like Table 1. Finally, before sending their response, students

had a video replicating the evaluation process on the MOOC platform, to provide them with the technical details. In addition, a specific forum was created to solve doubts in relation to the activity, and the course facilitators received specific instructions in this regard.

In the recording, I hear	Score		
1. The name and surname of one of the six characters in the activity:		1	0
Aisha Maalouf			
2. Who has studied in Damascus the degree in Translation			
3. Who has experience as a translator and interpreter			
4. Who speaks English, French and Arabic			
5. A pronunciation easy to understand, with good rhythm, intonation and accent			
Total			

Table 1. Assessment rubric for the P2P activity in the L-MOOC Puertas abiertas. Curso de español para necesidades inmediatas

The results of the pronunciation activities are summarized in Table 2. As we can see, the participation rates were very similar to the average of the activities in the corresponding lessons, and the success and error rates were also very close. Both intonation activities reached higher rates of participation compared with the mean of their lessons, and also the higher rates of success. The stress activity was the one that registered the highest number of wrong answers, with a 92% success rate, compared to 96.6% on average for that lesson; its participation rate was lower than for other pronunciation activities, but it was higher than the average for the lesson (420 answers, compared to an average of 411; in general, in this MOOC and in all of them, throughout the course the participation rates are decreasing, and the accent activity appeared in the penultimate module, while those of intonation and vowels preceded it). The exercise of the vowels was the only one, among the pronunciation activities, with participation below the average of the lesson; although in absolute numbers its hit rate also seems lower, there is no difference in percentage from the rest of the lesson: 97.5% of total responses, compared to an average of 97.6%.

		Hits	Fails
Intonation-I	Pronunciation activity	625	8
	Mean of the lesson	618,75	13
Vowels	Pronunciation activity	464	12
	Mean of the lesson	485,5	11,75
Intonation-II	Pronunciation activity	455	15
	Mean of the lesson	420,75	9,25

Table 2. Results of the pronunciation activities in the L-MOOC Puertas abiertas. Curso de español para necesidades inmediatas

As for the P2P activity, only 70 students' answers were received; only 17 also performed the peer evaluation, and 8 of them attached a written text, instead of an oral recording. This was a non-computable activity for the student's final grade (the instructions stated "it is an optional activity and does not count for your course progress, but it is highly recommended for practising your spoken Spanish").

The next section will discuss these results in the context of the state of the art presented above.

#### 5. Discussion

The pronunciation activities have been perfectly integrated with the rest of the exercises in our MOOC. And what is more interesting, the prosodical exercises dedicated to intonation and stress, frequently neglected in language courses, proved to be perfectly accessible to the students and even aroused their interest more than the traditional vowel exercises. Prosody has been shown to be particularly relevant for comprehensibility, intelligibility and fluency (e.g., Field 2005, Isaacs & Trofimovich 2012, Saito et al. 2018) and interacts continuously with the sounds level (Piñeros 2019): "from the very onset of learning, pronunciation activities should regularly and consistently incorporate larger prosodic structures than individual words" (Colantoni, Escudero, Marrero-Aguiar and Steele 2021). Being able to successfully include prosodic activities in a massive, online course, without individual tutoring and aimed at students who do not have language learning and pronunciation among their top priorities in life, such as refugees, can be considered a guarantee for its integration into the most common language teaching contexts as well.

Regarding the segmental level, our attention to vowels was determined by their high functional load in Spanish. They allow us to distinguish the masculine from the feminine, different verbal tenses, etc. and are very stable between our various dialects. This is a variable that we defend as relevant when prioritizing content in pronunciation teaching (Colantoni, Escudero, Marrero-Aguiar and Steele 2021).

Other research on pronunciation teaching through MOOCs, Estebas-Vilaplana and Solans 2020 has shown that, despite the limitations induced by the rigidity of the structure of these learning resources, and the lack of individualised support for students, the results obtained are very positive, especially when prosody (in their case, rhythm) is emphasised from the beginning: "the results of a final oral exam showed that the students who took the LMOOC did much better in their oral production than those who only worked with the regular course material" (Estebas-Vilaplana & Solans 2020:1).

However, not everything has been positive in this experience. The P2P evaluation activity, although carefully planned, did not have a good participation rate. The sharp drop in participation in this type of tasks is quite generalized (Bárcena, Martín-Monje & Castrillo 2014), and even more so when the exercise does not count in the final evaluation, as was our case. But, certainly, although the auditory discrimination activities that precede the oral production were well received by the students, whose results were excellent in the corresponding tests, moving on to the production exercises surely requires a more measured gradation in the difficulty of the task, as recommended by Gil Fernández 2007, Mellado Prado 2012, or Delicado Cantero, Steed & Herrero de Haro 2019, among others. It would be advisable to start with repetition in imitation, then controlled production of isolated words and sentences, and finally, free production of texts such as the one included in our P2P,

Some previous experiences on teaching pronunciation in L-MOOC (Rubio 2015) base their success on very thorough feedback from teachers, something that is only feasible when the number of learners is relatively limited. If we are faced with several hundreds of exercises, individual correction by instructors is not affordable. In these situations, from our point of view, there are three tools available to teachers that can help them overcome the challenge:

First, a careful grading of the difficulty of the tasks, always working on the perception before production, focusing on elements with high profitability in the language (very informative, common to the different dialectal varieties), and paying at least the same attention to the suprasegmental level (intonation, accent) as to the segmental level the sound system (Colantoni, Escuderon, Marrero-Aguiar & Steele 2021).

Second, make use of the almost infinite storage possibilities of online learning systems to provide a large number of stimuli to the students, even if not all of them are fully utilized, and without this exhaustive use being a requirement for successful completion of the course.

And, last but not least, try to make the most of the peer's evaluation, with careful, accessible, and sensitive enough assessment rubrics, in order to result in meaningful feedback, assigning an attractive score to these tasks and progressively increasing their difficulty.

#### 6. Conclusion. The next steps

Paying attention and training learners in the tasks of language production is a challenge for any teacher of second languages, particularly when the learning environment is a massive online course. And oral

production (for which pronunciation is an essential component) is surely even more complex to handle than written skills.

In this paper, we have presented the results of incorporating pronunciation activities in two massive, online, and open Spanish courses for foreigners. We have followed a careful gradation of the difficulty of the tasks, starting with auditory awareness, supported by simple theoretical explanations and multimedia (with visual elements to support the auditory stimuli), and focusing on the suprasegmental level and on sounds with a high functional load. The results have generally been very positive, although there is room for improvement in the oral production activities.

But above all, it is one more step on a path that we trust will be long and fruitful, to the goal of gaining confidence, on the part of both teachers and students, in the real possibilities of developing oral production skills by means that go beyond a continuous individual face-to-face interaction between teacher and learner. Once the health emergency that has brought the online learning environments to the fore around the world will be solved, technology has come to stay in the world of second language learning and can be a valuable tool for learners who do not have easy access to traditional means of teaching/learning, such as asylum and refugee seekers, or migrants in general, as in the case study presented here.

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