

**MOOCs: Origins, Concept and Didactic Applications. A Systematic Review of the Literature  
(2012-2019)**

Francisco J. Palacios Hidalgo (Corresponding author)

[francisco.palacios@uco.es](mailto:francisco.palacios@uco.es)

University of Córdoba (Spain)

Faculty of Education Sciences and Psychology. Av. San Alberto Magno, sn. E-14071. Córdoba.  
Spain.

ORCID: 0000-0002-4326-209X

Cristina A. Huertas Abril

University of Córdoba (Spain)

Faculty of Education Sciences and Psychology. Av. San Alberto Magno, sn. E-14071. Córdoba.  
Spain.

ORCID: 0000-0002-9057-5224

M<sup>a</sup> Elena Gómez Parra

University of Córdoba (Spain)

Faculty of Education Sciences and Psychology. Av. San Alberto Magno, sn. E-14071. Córdoba.  
Spain.

ORCID: 0000-0001-7870-3505

**ACKNOWLEDGEMENTS**

This work has been supported by the Spanish Ministry of Education (Resolución de 5 de diciembre de 2017, de la Secretaría de Estado de Educación, Formación Profesional y Universidades, por la que se convocan ayudas para la formación de profesorado universitario, de los Subprogramas de Formación y de Movilidad incluidos en el Programa Estatal de Promoción del Talento y su Empleabilidad, en el marco del Plan Estatal de Investigación Científica y Técnica y de Innovación 2013-2016).

**ABSTRACT**

Nowadays, learning and teaching processes cannot be understood without technology. Among all digital resources available for education, Massive Open Online Courses (MOOCs) stand as great online tools that can facilitate the learning process of any type of content. In this sense, literature about MOOCs' implications in education has increased exponentially in recent years. This paper presents the results of a systematic literature review on MOOCs' origins and definition, their typologies and platforms, their strengths and limitations, the concept of specialization courses, and their didactic applications for Foreign Language Learning. The review followed a four-stage methodology for the analysis and synthesis of a total of 55 studies published between the years 2012

and 2019. Findings revealed that, although MOOCs have great potential for education, few studies have addressed neither the possibilities of these courses for Foreign Language Learning nor the potential of specialization courses. Main conclusions entail the need to face MOOCs' limitations to get the most out of them as well as more research on their potential for Foreign Language Learning and the possibilities of brand-new typologies such as nanoMOOCs.

**Keywords:** MOOC; Massive Open Online Courses; e-learning; Foreign Language Learning; systematic literature review.

## 1. INTRODUCTION AND STATEMENT OF THE PROBLEM

The current educational context is undeniably changing due to, among other reasons, the emergence of new technological paradigms (Castells 2005; Sanz and Pantoja 2015). These changes are making the world more dynamic and highly competitive and in this light, institutions are starting to demand human resources with up-to-date skills. Among all of them, abilities to use digital resources and to effectively communicate in a foreign language appear as the main requirements for 21<sup>st</sup>-century citizens (European Commission 2018; Vassiliou and Šemeta 2012). In this scenario, open education –based on the fact that everyone in the world should have access to free, high-quality educational experiences– and technology seem to be key to meet such demands and, although they are not anything new, their power is increasing (Chiappe-Laverde, Hine, and Martínez-Silva 2015).

As for technology, despite having been present for decades in educational contexts, it has become an essential part of learning and teaching processes (Guri-Rosenblit 2018; Tafazoli, Gómez and Huertas 2018; Tejada and Fernández 2018). Proof of this is the fact that countries from every nook and cranny of the planet are making large investments to improve their education systems by changing curricula, improving facilities and supporting educational research, among many other actions (Baglieri, Baldi and Tucci 2018; Munari, Sobrero, and Toschi 2018).

Among all technological resources, ICT, e-learning tools and Massive Open Online Courses (MOOCs) arise as great formative tools, i.e., resources that can facilitate the learning process of any type of content. MOOCs emerge in 2011 and since then, many studies have claim that they have already become a consolidated reality in education (cf. Aguaded 2013; Buhl and Andreasen, 2018; Cabero 2015; Johnson, Adams, Cummins and Estrada 2012; Ochoa and Neves 2016; Sagar 2016).

Over the last years, specific literature about MOOCs and their implications in education has increased exponentially. Several reviews of these courses have been carried out on their benefits and impact on the e-learning context (Fernández and Webster 2014; Gómez, García, and Monge 2016; Gómez, Monge, and Sebastián, 2016; Lee, Watson, and Watson 2019; Liyanagunawardena, Adams, and Williams 2013; Ramírez-Fernández 2015a; Zhu, Sari, and Lee 2018). However, clarification of such benefits and impact on learning processes together with an extended classification of MOOCs typologies, platforms and specific MOOC-related terms like “specialization courses” is necessary. Furthermore, since few connections between MOOCs and language learning (Chacón-Beltrán 2017; Palacios 2018; Palacios and Huertas 2016; Varela and Burbat 2017; Vorobyeva 2018) have been explored and even fewer systematic literature reviews on MOOCs for Foreign Language Learning (Rinatovna, Vladimirovna, Bizyanova, and Haidar 2017) have been carried out, possibilities of MOOCs on this field must be examined.

This paper aims to create a systematic literature review on the educational potential of MOOCs analysing papers published between 2012 and 2019. It also aims to revise what has been studied on MOOCs' their relation to Foreign Language Learning. Ultimately, the study will provide a clear explanation of the potential of MOOCs as educational tools in general and as resources for Foreign Language Learning in particular, thus contributing to up-to-date research fields such as Computer-Based Learning and Computer-Assisted Language Learning by presenting some suggestions on how MOOCs could be used for Foreign Language Learning. The main goal of the paper is then to answer the following specific research questions (RQs hereafter; Table 1) by developing a descriptive analysis of scientific literature published in 2012-2019:

Table 1. RQs and motivations

RQs	Motivations
RQ1: What is the status of studies on MOOCs published from 2012 to 2019?	This question is meant to discover factual information about MOOCs revealing what has been studied up to 2019. Its answers will provide a starting point to understand the basics of these courses as information about their origins, main types and platforms will be drawn
RQ2: What is the status of studies on MOOCs' strengths and limitations published from 2012 to 2019?	This question is meant to provide an overview of the benefits and barriers of MOOCs. Its answer will provide researchers with information about their potential and limitations for learning
RQ3: What is the status of studies on MOOCs' didactic applications for Foreign Language Learning published from 2012 to 2019?	This question is meant to deepen into the possibilities of MOOCs for applications for Foreign Language Learning. Its answer will provide a starting point for researchers to understand and reflect on the potential of MOOCs for Foreign Language Learning

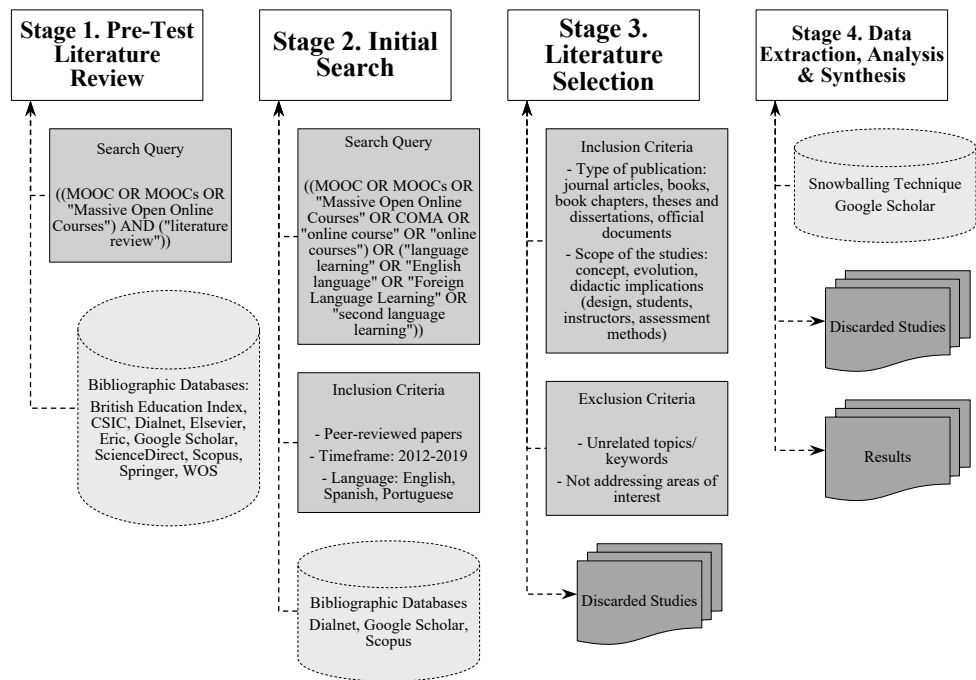
Source: Own elaboration

## 2. METHOD

The method used in this study was a systematic literature review, including both empirical and non-empirical works such as literature reviews and conceptual papers, which collects and analyses the most recent research in the field of MOOCs and explores previous research on their strengths and limitations and link to Foreign Language Learning.

The following sub-sections and Fig. 1 present the research protocol followed in order to reduce bias in the review, which, according to Kitchenham et al.'s guidelines (2009) and Sanchez-Gordon and Luján-Mora's stages (2018), consisted on (i) pre-test literature review, (ii) initial search, (iii) literature selection, and (iv) data extraction, analysis and synthesis.

**Fig. 1** Stages of the Systematic Review



Source: Own elaboration

## 2.1 Stage 1. Pre-Test Literature Review

This stage included:

- Checking if previous systematic reviews on MOOCs have been carried out.
- Performing a general search in bibliographic databases (British Education Index, CSIC, Dialnet, Elsevier, Eric, Google Scholar, ScienceDirect, Scopus, Springer, WOS) to measure the approximate size of the documentary corpus.
- Identifying keywords to include in the search query and areas of interest to consider for the analysis.

## 2.2 Stage 2. Initial Search

This stage included:

- Developing the research protocol by stating the RQs and motivations (see Table 1), creating the search query (see Fig. 1), identifying relevant bibliographic databases (Dialnet, Google Scholar and Scopus), establishing the timeframe (2012 to 2019), and limiting the languages (Spanish, English and Portuguese). It is worth mentioning that, considering the few references related to the connection between MOOCs and Foreign Language Learning observed in the pre-test phase, the search query for this stage used the operators “OR” rather than “AND” not to exclude possibly relevant studies.
- Conducting an initial search in the identified bibliographic databases to create an initial documentary corpus.

### **2.3 Stage 3. Literature Selection**

This stage included:

- Analysing the titles, abstracts and keywords following inclusion and exclusion criteria.
  - o Inclusion criteria: documents have to be peer-reviewed journal articles, books, book chapters, theses/dissertations, or documents written by official institutions; studies have to address at least one of the six areas of interest considered –(1) origins and definition of MOOCs and related concepts; (2) MOOC types, (3) MOOC platforms; (4) strengths and limitations of the courses; (5) concept of specialization courses; and (6) didactic applications for (Foreign) Language Learning–; they have also to present the research methods, study focus, and/or results in a clear way.
  - o Exclusion criteria: studies with unrelated topics and/or keywords not addressing any of the inclusion criteria.
- Assessing the quality and relevance of the papers using a four-point Likert scale: researchers graded papers from 1 to 4 (1 = totally irrelevant for the study; 2 = irrelevant for the study; 3 = relevant for the study; 4 = totally relevant for the study) to determine whether documents should be used in the study.
- Minimizing bias having three researchers working independently: the papers were analysed by the three researchers to guarantee that all of them were triple-checked.
- Selecting papers with a minimum mean score of 3; papers that had received a score of 1 by at least one of the researchers were directly excluded.

### **2.4 Stage 4. Data Extraction, Analysis and Synthesis**

This stage included:

- Obtaining the full text from the selected databases.
- Using Mendeley software to extract data from the full papers and organize detailed bibliographic information.
- Applying the snowballing technique to expand the documentary corpus (Jalali and Wohlin 2012): using Google Scholar database to identify related studies that have cited the studies already selected and review their references.
- Performing a descriptive synthesis to identify to what extent studies addressed the inclusion criteria.
- Minimizing bias having three researchers working co-operatively: the papers were analysed by the three researchers in order to guarantee that all of them were triple-checked; in particular, the research methods, study focus, and results were analysed in this stage and,

in the case of disagreement, the researchers discussed and negotiated the results of each phase of the analysis until they reached consensus.

- Answering the RQs (see Table 1).

Microsoft Excel software was used for analysing information of the selected studies; furthermore, the content analysis technique (Bardin 2013) was applied to categorise the papers and facilitate later conclusions' writing. Analysis followed logical reading, analysis, synthesis, deduction and induction procedures to establish a well-organised state of the art following Okoli's (2015) guidelines.

### 3. RESULTS

The systematic literature review was carried out from September 2018 to April 2019. The goal of this section is to present the most significant results of the four stages of the study. Despite presenting some basic quantitative data on the corpus of analysed studies, the authors have decided to present findings in a descriptive way, although conscious of the limitations of doing so, to provide a clear, understandable conceptual framework on the object under study.

#### 3.1 Stage 1. Pre-Test Literature Review

In this stage, the pre-test search query defined in Fig. 1 was applied. A total of 7 systematic literature reviews on MOOCs, published between 2012 and 2019, was selected. The chosen studies were analysed to reveal areas of research regarding MOOCs that could serve to refine subsequent searches by identifying keywords and topics, as well as to identify the main issues considered in previous similar studies. Furthermore, it was specifically checked whether selected studies had considered the appropriacy of MOOCs for Foreign Language Learning; none of the original 7 selected had. Table 2 shows the distribution of selected studies per year of publication:

Table 2. Selected literature reviews on MOOCs published in 2012-2019

Year	Short Reference
2013	(Liyaganawardena, Adams, and Williams 2013)
2014	(Ebben and Murphy 2014)
2015	(Chiappe-Laverde, Hine, and Martínez-Silva 2015) (Kovanović, Joksimović, Gašević, Siemens, and Hatala 2015) (Rolfe 2015) (Sangrà, González-Sanmamed, and Anderson 2015) (Veletsianos and Shepherdson 2015)

Source: Own elaboration

In 2013, Liyanagunawardena et al., who focus on studies published in 2008-2012, reviews the concept of MOOC, some case studies and the educational theory on which these courses are based. The authors reveal the growing interest in MOOCs in scientific literature, being learners' perspective on the courses the main analysed issue, as well as a lack of focus on MOOC facilitators' experience and practices, cultural differences of MOOCs' users, and ethical aspects of MOOC use.

In 2014, Ebben and Murphy, who focus on literature published in 2009-2013, develop a chronological framework for understanding the emergence and evolution of the concept of MOOC. Their results show how scholars have started to develop conceptual frameworks on aspects of MOOCs, threats and opportunities in Higher Education, pedagogical approaches, hardware and software used in the courses, and participants' and creators' experiences and leaders, together with some case studies; furthermore, the authors identify two main phases of study up to 2013: cMOOCs, engagement and creativity from 2009 to 2012, and xMOOCs, learning analytics, assessment, and critical discourse from 2012 until 2013.

In 2015, Chiappe-Laverde et al. analyse practices regarding MOOCs and issues related to the implementation of a MOOC-based teaching model published in 2007-2013, confirming the rapid growth in interest in MOOCs being the concept of openness and institutional factors such as financial viability and certificates the most discussed issues, but also showing how "a rich, original idea that started strongly, with high expectations based on the innovative potential of openness, has, over the years, gradually becoming a mechanical formula with little genuine creativity but more focused on reaching global audiences" (p. 15). Kovanović et al., who focus on studies published in 2008-2014, describe the public discourse and opinions around MOOCs, identifying how MOOC-related reports have changed in focus since 2014 from providers and funding to the overall position of MOOCs in the global educational landscape and government-related issues and also showing the decrease of MOOC coverage in public media since then. Rolfe aims at analysing the socio-ethical aspects regarding MOOCs from papers published up to 2014, describing a gap in scientific literature concerning MOOC learners' both in terms of academic success, satisfaction and social, cultural and ethical perspective. Sangrà et al. find how pedagogical strategies and implications for Higher Education are the most common focus of studies published in 2013-2014. Finally, Veletsianos and Shepherdson reveal a shift of focus to interdisciplinarity in studies published after 2012, and how "greater interdisciplinarity in xMOOC research could reflect the burgeoning interest in the field, the general familiarity with the xMOOC pedagogical model, and the hype experienced by xMOOCs" (p. 1).

After this initial search, researchers found necessary to redefine the search query to access to papers that could help answer the RQs (see Table 1).

### **3.2 Stage 2. Initial Search**

In this stage, searches following the research protocol and search query defined in Fig. 1 were conducted. A total of 78 studies were selected; Table 3 shows the distribution of identified studies by type and year of publication, including total number and percentage:

Table 3. Distribution by type and year of publication of studies identified in stage 2

	2012	2013	2014	2015	2016	2017	2018	2019	No. of Studies %	
Books	1	1	0	1	1	0	0	0	4	5.13
Book chapters	1	3	2	0	4	0	1	2	13	16.67
Journal articles	2	7	9	6	4	4	8	3	43	55.13
Reports and others	5	7	3	1	2	0	0	0	18	23.08
<b>No. of Studies</b>	9	18	14	8	11	4	9	5	78	

Source: Own elaboration

### 3.3 Stage 3. Literature Selection

In this stage, the number of texts identified in previous stages was filtered: 60 studies out of the initial 78 were selected. 18 studies were discarded because they presented unrelated topics and/or keywords, had not obtained a minimum mean score of 3 after researchers' individual analyses, or had received a score of 1 by at least one of the researchers. Table 4 shows the distribution of selected studies by type and year of publication, including total number and percentage:

Table 4. Distribution by type and year of publication of studies selected in stage 3

	2012	2013	2014	2015	2016	2017	2018	2019	No. of Studies %	
Books	1	1	0	0	1	0	0	0	3	5
Book chapters	1	1	2	0	3	0	1	2	10	16.67
Journal articles	2	5	6	6	4	4	7	1	35	58.33
Reports and others	3	6	2	1	0	0	0	0	12	20
<b>No. of Studies</b>	7	13	10	7	8	4	8	3	60	

Source: Own elaboration

### 3.4 Stage 4. Data Extraction, Analysis and Synthesis

In this stage, the number of studies collected and considered was 48 out of the 60 selected in stage 3. 12 papers were excluded from the study because their content was not relevant (e.g. MOOCs for learning literature and other subjects related to Foreign Languages). Then, the snowballing



technique (Jalali and Wohlin 2012) was applied, finding 7 additional relevant studies; these, along with the 48 studies already collected constituted the 55 studies considered for the final stage. Table 5 shows the distribution of selected studies by type and year of publication, including total number and percentage:

Table 5. Distribution by type and year of publication of studies selected in stage 4

	2012	2013	2014	2015	2016	2017	2018	2019	No. of	
									Studies	%
Books	1	0	0	0	1	0	0	0	2	3.64
Additional books	0	0	0	0	0	0	0	0	0	0.00
Book chapters	0	0	2	0	2	0	0	0	4	7.27
Additional book chapters	0	0	1	0	0	0	1	0	2	3.64
Journal articles	0	4	4	4	4	3	6	1	26	47.27
Additional journal articles	0	1	0	2	0	1	1	1	6	10.91
Reports and others	3	6	2	1	0	0	0	0	12	21.82
Additional reports and others	0	1	1	0	0	0	1	0	3	5.45
<b>No. of Studies</b>	4	12	10	7	7	4	9	2	55	

Source: Own elaboration

The 55 selected and analysed studies have helped answer the RQs (see Table 1). The following table (Table 6) show detailed information of each of the items in chronological order including short reference, type of publication, sources (Dialnet as DIA, Google Scholar as GS, and Scopus as SCO) and year of publication, research methods and dimensions, as well as the areas of interest addressed (i.e., (1) MOOC origins, definition and related concepts; (2) MOOC types, (3) MOOC platforms; (4) MOOC strengths and limitations; (5) specialization courses; and (6) applications for (Foreign Language Learning):

Table 6. Detailed information of selected studies

Short Reference	Type	Research Methods	Research Dimensions	Source	Area of Interest
(Durall, Gros, Maina, Johnson and Adams 2012)	Book	Exploratory research: descriptive analysis based on a systematic literature review and a Delphi-based methodology	Impact of ICT on teaching, learning and research in Latin-American Higher Education	GS	1, 4

(Johnson, Adams, Cummins and Estrada 2012)	Report / Other	Exploratory research: descriptive analysis based on a systematic literature review and a Delphi-based methodology	Impact of ICT on teaching, learning and research in Latin-American Higher Education	GS	1, 4
(Siemens 2012a)	Report / Other	Exploratory research: descriptive analysis	State of the art about MOOCs	GS	1
(Siemens 2012b)	Report / Other	Exploratory research: descriptive analysis	State of the art about MOOCs	GS	2
(Aguaded 2013)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs	GS	1, 4
(Clark 2013)	Report / Other	Exploratory research: descriptive analysis	Typologies of MOOCs	GS	1, 2
(Hill 2013)	Report / Other	Exploratory research: descriptive analysis	Users of MOOCs	GS	1
(Johnson, Adams, Cummins, Estrada, Freeman and Ludgate 2013)	Report / Other	Exploratory research: descriptive analysis based on a systematic literature review and a Delphi-based methodology	Impact of ICT on teaching, learning and research in Latin-American Higher Education	GS	1, 3, 4
(Johnson, Adams, Cummins, Freeman, Ifenthaler and Vardaxis 2013)	Report / Other	Exploratory research: descriptive analysis based on a systematic literature review and a Delphi-based methodology	Impact of ICT on teaching, learning and research in Latin-American Higher Education	GS	1, 3, 4
(Liyanagunawardena, Adams and Williams 2013)	Journal Article	Systematic literature review (45 peer reviewed papers)	State of the art about MOOCs	GS/SCO	1, 2, 3, 4
(Moya 2013)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs	GS	1, 2, 3, 4
(Pernías and Luján 2013)	Journal Article	Exploratory research: descriptive analysis	Origins, evolution and typologies of MOOCs	DIA/GS	1, 2, 4
(Ruiz 2013)	Report / Other	Exploratory research: descriptive analysis of scientific literature and mixed-method descriptive analysis of a corpus of selected MOOCs	State of the art about MOOCs and analysis of offered MOOCs on Coursera, EdX, MiriadaX and Udacity	GS	1, 3
(SCOPEO 2013)	Report / Other	Exploratory research: descriptive analysis,	State of the art about MOOCs	GS	1, 2, 3, 4

		qualitative semi-structured interviews and focus group			
(Teplechuk 2013)	Report / Other	Qualitative semi-structured interviews, on-site observations and informal conversations with stakeholders	Analysis of needs and behaviour of MOOC providers	GS	1, 2, 3, 4
(Zapata-Ros 2013)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs	DIA/GS	1
(Ávila 2014)	Report / Other	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on strengths and limitations	GS	1, 4
(Brouns, Mota, Morgado, Jansen, Fano, Silva and Teixeira 2014)	Book Chapter	Exploratory research: descriptive analysis	MOOCs with a focus on strengths and limitations	GS	1, 2, 4
(Fernández and Webster 2014)	Journal Article	Exploratory research: descriptive analysis	Analysis of the link between OCW / OERs and MOOCs	DIA/GS	1, 6
(Matías and Pérez 2014)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on strengths and limitations	DIA/GS	1, 2, 3
(Medina-Salguero and Aguaded 2014)	Journal Article	Exploratory research: descriptive analysis	Analysis of MOOCs offered by MiriadaX	DIA/GS/SCO	1, 2, 3, 4
(Onah, Sinclair and Boyatt 2014)	Book Chapter	Exploratory research: descriptive analysis and study case	Dropout Rates of MOOCs	GS	4
(OpenupEd 2014)	Report / Other	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on definition	GS	1
(Poy and Gonzales-Aguilar 2014)	Journal Article	Exploratory research: descriptive analysis of scientific literature and mixed-method descriptive analysis of MOOC platforms	MOOCs with a focus on strengths and limitations	GS/SCO	1, 4
(Bárcena and Martín-Monje 2014)	Book Chapter	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on LMOOCs	GS/SCO	6

(Perifanou and Economides 2014)	Report / Other	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on LMOOCs	GS	1, 2, 3, 6
(Brouns, Bohuschke, Pedrosa, Fueyo, García, Pelayo and Fano 2015)	Report / Other	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on sMOOCs	GS	1, 2
(Cabero 2015)	Journal Article	Exploratory research: descriptive analysis	Didactic implications of MOOCs	DIA/GS	1, 2, 3, 4
(García 2015)	Journal Article	Exploratory research: descriptive analysis	Origins and evolution of MOOCs	GS	1, 3, 4
(Mailhes and Raspa 2015)	Journal Article	Exploratory research: descriptive analysis	Origins, evolution and didactic implications of MOOCs	GS	1, 3
(Ramírez-Fernández 2015a)	Journal Article	Exploratory research: descriptive analysis	Analysis of MOOC quality	DIA/GS	1, 4
(Ramírez-Fernández 2015b)	Journal Article	Quantitative analysis of the quality of 5 MOOCs	Analysis of MOOC quality	DIA/GS	1, 4
(Shen and Kuo 2015)	Journal Article	Data mining techniques applied to one-year Twitter data	Didactic implications of MOOCs	GS/SCO	1, 4, 6
(Calvo, Rodríguez and Fernández 2016)	Journal Article	Exploratory research: qualitative analysis of 18 MOOC platforms	Analysis of offered MOOCs and their topics	GS	1, 3, 4
(Fano, Fueyo and Osuna 2016)	Book Chapter	Exploratory research: descriptive analysis	Organizational policies affecting MOOCs	DIA/GS	1, 2
(Gómez, García and Monge 2016)	Book	Exploratory research: descriptive analysis	Impact of MOOCs in Higher Education	GS	1, 2, 3, 4
(Gómez, Monge and Sebastián 2016)	Journal Article	Exploratory research: study case of a MOOC	Analysis of MOOC quality	DIA/GS	1, 3, 4
(Ochoa and Neves 2016)	Book Chapter	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on sMOOCs	DIA/GS	4
(Palacios and Huertas 2016)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on LMOOCs and language teacher training	DIA/GS	1, 6
(Selater 2016)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs	DIA/GS	1, 4, 6

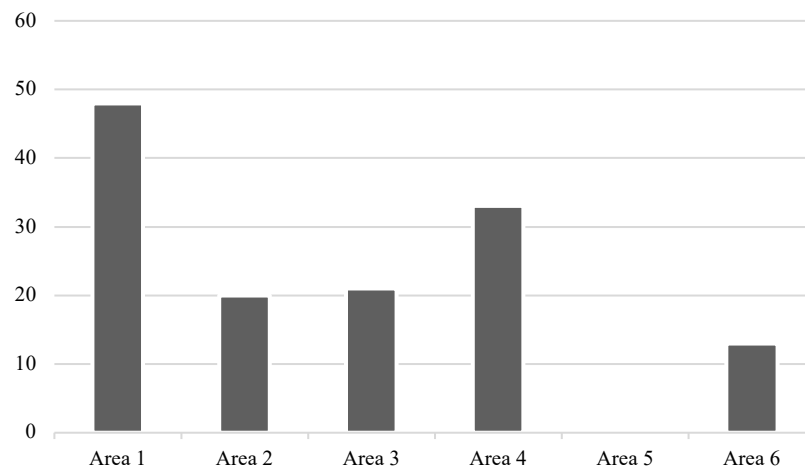
(Chacón-Beltrán 2017)	Journal Article	Quantitative analysis based on an online questionnaire applied to 9356 participants of a MOOC	Study of users of an LMOOC	DIA/GS/SCO	1, 3, 4, 6
(Escudero and Núñez 2017)	Journal Article	Exploratory research: qualitative analysis based on a grounded theory methodology	Impact of MOOCs in Higher Education	DIA/GS	4
(Rinatovna, Vladimirovna, Bizyanova and Haidar 2017)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on sMOOCs	GS	1, 4, 6
(Varela and Burbat 2017)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on LMOOCs	GS	1, 6
(Buhl and Andreasen 2018)	Journal Article	Exploratory research: descriptive analysis	MOOCs with a focus on strengths and limitations	GS/SCO	1, 2, 3, 4
(Callejo-Gallego and Agudo-Arroyo 2018)	Journal Article	Quantitative analysis based on a 30-question questionnaire administered to 1654 users of 21 MOOCs	Origins and evolution of MOOCs	DIA/GS	1, 4
(Gil and Martínez 2018)	Journal Article	Mixed-method analysis of the learning environment of two MOOCs based on an ethnographic study case	State of the art about MOOCs with a focus on sMOOCs	DIA/GS/SCO	1, 2, 4
(Osuna-Acedo, Marta-Lazo and Frau-Meigs 2018)	Journal Article	Systematic literature review (70 peer reviewed papers)	State of the art about MOOCs with a focus on sMOOCs and tMOOCs	DIA/GS/SCO	1, 2
(Palacios 2018)	Book Chapter	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on LMOOCs	DIA/GS	1, 6
(Vadillo and Bucio 2018)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus MOOC design	GS	1, 2, 3, 4
(Vorobyeva 2018)	Journal Article	Systematic literature review	State of the art about MOOCs with a focus on LMOOCs	SCO	1, 6

(Zhu, Sari and Lee 2018)	Journal Article	Systematic literature review (146 peer reviewed papers)	State of the art about MOOCs	GS/SCO	1, 2, 3, 4
(Shah 2018)	Report / Other	Exploratory research: descriptive analysis	State of the art about MOOCs	GS	3, 6
(Lee, Watson and Watson 2019)	Journal Article	Systematic literature review (21 peer reviewed papers)	State of the art about MOOCs with a focus on strengths and limitations	GS/SCO	1
(Jitpaisarnwattana, Reinders and Darasawang 2019)	Journal Article	Exploratory research: descriptive analysis	State of the art about MOOCs with a focus on LMOOCs	GS	6

Source: Own elaboration

Finally, Fig. 2 shows the percentage of selected studies that have contributed to answering each RQ:

**Fig. 2** Contributions of Selected Studies to the Areas of Interest



Source: Own elaboration

#### 4. DISCUSSION

The results of this systematic review have shown that the number of studies addressing the link between MOOCs and Foreign Language Learning is still scarce. However, some relevant information has been found concerning other MOOC-related concepts, (i.e., definition, typologies, platforms, and strengths and limitations) and their connection with education from a general perspective. In this section, an answer to each RQ (see Table 1) is presented based on the main findings of the study.

#### 4.1 What Is a MOOC? Origins, Definition and Related Concepts

A total of 48 studies of the 55 selected (87.28%) provided information about either the concept of MOOC or their origins (e.g. Aguaded 2013; Lee, Watson and Watson 2019; Ramírez-Fernández 2015b), which implies that there is already enough knowledge in this respect. Nevertheless, it seems relevant to present some of the most significant findings in this field.

Nowadays, we live in a context where ICT play a central role in our lives, especially in knowledge spread and learning accessibility. The use of these technologies in all educational stages is developing new, powerful ways that allow quick access to quality information. Not only does this make possible to act directly with present necessities, but also to construct and develop skills for the future. In this context, MOOCs have arisen as free, online courses in which students can enrol and collaborate with course-mates from all over the world, with the singularity of deciding how, when and how much to participate, something that strengthens peer-learning and personal autonomy (Moya 2013).

The concept was coined in 2008 by Cormier and Alexander (Siemens 2012a) to allude to “Connectivism and Connective Knowledge”, a course organized at the University of Manitoba (Canada). While this course is considered as the origin of the concept, MOOCs were not relevant until 2011 when another course of the University of Stanford (USA), “Artificial Intelligence”, had over 120 thousand participants (Moya 2013). Since then, there has been a deluge of MOOCs centred on new educational technologies and different learning theories.

As for their definition and characteristics, the Horizon reports selected for the review (Durall, Gros, Maina, Johnson, and Adams 2012; Johnson, Adams, Cummins, Estrada, Freeman, and Ludgate 2013; Johnson, Adams, Cummins, Freeman, Ifenthaler, and Vardaxis 2013) have specified what the term ‘MOOC’ means:

courses designed for large numbers of participants, that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free (Brouns, Mota, Morgado, Jansen, Fano, Silva, and Teixeira 2014, p. 48).

A more extensive discussion about the definition of MOOCs can be found at Brouns, Bohuschke, Pedrosa, Fueyo, García, Pelayo, and Fano (2015) and OpenupEd (2014). However, García (2015) provides a specific clarification about this concept: a MOOC is not just a normal online course, it is an open, participatory and distributed study program where work is shared among participants to create a lifelong and worldwide network of knowledge.

Regarding MOOCs’ distinctive features, they are quite similar to classrooms as they both have starting/completion dates and follow assessment methods. However, as Castaño and Cabero (2013) and Mailhes and Raspa (2015) point, their most significant characteristic is their free access, as anyone can participate deciding the nature of such participation according to their needs and interests.

On their part, Pernías and Luján (2013) analyse the close link between MOOCs and two phenomena which have been developed in the last decade: Open Educational Resources (OERs) and

Open Social Learning (OSL). OERs are educational materials and resources that can be re-used for the teaching-learning process for free. Santos-Hermosa, Ferrán-Ferrer and Abadal (2012) conclude that their peculiarities reside in their easy access (i.e., they can be found and used at any time and place), possibility of re-using and modifying them in different teaching and learning contexts, the inter-operativeness (i.e., the ability of being connected with other technological elements and devices), sustainability (i.e., the correct functioning regardless of software's changes or updates) and metadata (i.e., descriptors which make easier indexing, storing, search and recovery) for a better use of these resources. Moreover, OSL can be understood as a way of active and self-managed learning developed thanks to the use of technology (Gil-Jaurena and Domínguez 2012), an environment where students make connections with both people and electronic/online resources (Cortés and Lozano 2014; Sclater 2016).

Bearing all the analysed studies in mind, a common question regarding MOOCs can be answered: what is the difference between a MOOC and any other online course we can easily find on the Internet? Nowadays there is indeed a large number of platforms which offer online courses about almost every topic imaginable; however, the relevance of MOOCs resides in the support that universities and international organizations provide. In this light, it can be confirmed the considerable relevance that MOOCs are acquiring in every field of education due to the fact that they offer a permanent training which (i) is constantly evolving, (ii) proposes an autonomy-based teaching-learning model, and (iii) offers free and massive access to knowledge and information.

#### **4.2 Types of MOOCs**

Out of the 55 selected studies, 20 (36.36%) presented information about the typologies of MOOC that have been developed since their origins (e.g. Buhl and Andreasen 2018; Matías and Pérez 2014; Siemens 2012b). However, the widest and most detailed classification was formulated by Clark (2013), who identified eight types:

- transferMOOC: they take existing courses from universities' e-learning platforms and transfer them to a MOOC platform.
- madeMOOC: they use videos, focus on the quality of the tasks that students have to fulfil, and foster collaboration and co-assessment (i.e., students take part in their assessment process collaborating with the teacher).
- synchMOOC: with specific starting, completion and assessment dates.
- asynchMOOC: no deadlines.
- adaptiveMOOC: personalized learning experiences.
- groupMOOC: designed for specific groups of students.
- connectivistMOOC: in line with the courses organized by Siemens and Downes.
- miniMOOCs: with few contents and short duration (they often fit the semester structure, as well as the schedule of traditional institutions).



Notwithstanding Clark’s taxonomy, the findings have revealed that it is more common to consider four basic types: xMOOC, cMOOC, sMOOC and tMOOC (Gil and Martínez 2018; Osuna-Acedo, Marta-Lazo, and Frau-Meigs 2018; Vadillo and Bucio 2018). xMOOCs are traditional e-learning courses organized by universities and adapted to the peculiarities of MOOC platforms, while cMOOCs focus on connectivity between students:

[A cMOOC] emphasizes creation, creativity, autonomy, and social networked learning. The Coursera model emphasizes a more traditional learning approach through video presentations and short quizzes and testing. Put another way, cMOOCs focus on knowledge creation and generation whereas xMOOCs focus on knowledge duplication. (Siemens 2012b, para. 3).

Both xMOOCs and cMOOCs promote the acquisition of diverse competences and allow improving several skills. By using this idea, Moya (2013) tried to establish discrepancies between these two types and The Four Pillars of Learning (Table 7), the fundamental principles for reshaping 21<sup>st</sup>-century education (ICETFC 1996):

Table 7. Pillars of Learning, xMOOCs and cMOOCs

<b>Pillars of Learning</b>	<b>xMOOCs</b>	<b>cMOOCs</b>
Learning to know	<ul style="list-style-type: none"> <li>- Teacher-centred</li> <li>- Linear learning guided by the teacher</li> </ul>	<ul style="list-style-type: none"> <li>- Learning by sharing experiences and knowledge with others</li> <li>- Active/participative learning</li> </ul>
Learning to do	<ul style="list-style-type: none"> <li>- Tasks assess whether contents have been acquired by using self-assessment</li> <li>- Passive learning</li> </ul>	<ul style="list-style-type: none"> <li>- Tasks organized depending on participants’ implication and the relation among them</li> <li>- Active learning (i.e., focused on learning by doing)</li> </ul>
Learning to live together	<ul style="list-style-type: none"> <li>- Not considered; learning is seen as an individual process</li> <li>- No need for collaboration</li> </ul>	<ul style="list-style-type: none"> <li>- Collaborative/cooperative learning</li> <li>- Relation among participants</li> </ul>
Learning to be	<ul style="list-style-type: none"> <li>- Individualised learning; the development of this pillar depends on the participant</li> <li>- Connected with lifelong learning</li> </ul>	<ul style="list-style-type: none"> <li>- Connection between participants; interactions make us grow as human beings</li> </ul>

Source: Adapted from Moya 2013, p. 167

Regarding xMOOCs and cMOOCs, the ECO Project appeared in 2014 to gather those European universities and research centres that organise quality MOOC, which differ from traditional and American MOOCs. Under this project, critical trends towards xMOOCs are analysed and new paradigms are explored and demanded: at this point sMOOCs (socialMOOCs) emerge as fundamentally social courses characterised by interactivity using social networks, making users

participate as active agents in the course and moving from connectivity to engagement (Fano, Fueyo, and Osuna 2016; Gil and Martínez 2018).

tMOOCs (transferMOOCs, different to Clark's) focus on the transfer of learning and pedagogical transformation by generating interest towards action and professional interaction (Osuna-Acedo, Marta-Lazo, and Frau-Meigs 2018) and have the objective of empowering students' professional practice by giving them the competences needed to apply what they have learnt in the course to their professional life.

Finally, two new MOOC-types are growing. On the one hand, NOOCs (or nanoMOOCs) allow participants to explore, learn and be evaluated on a certain element of a competence or area of knowledge in a period of time that can go from one hour up to 20 (INTEF 2016); unlike with MOOCs, few studies analyse their results, although the reduced amount of time needed to build knowledge is NOOCs' most significant feature (Pérez, Jordano and Martín-Cuadrado 2017). On the other hand, LMOOCs (or languageMOOCs), which are still in a developmental stage, are "dedicated web-based online courses for second languages with unrestricted access and potentially unlimited participation" (Bárcena and Martín-Monje 2014, p. 1). These seem to be the most powerful for Foreign Language Learning as they are directed to that goal and, although the majority are for learning English, interest in other languages, such as Chinese, Japanese and Spanish, is growing (Perifanou and Economides 2014). However, neither NOOCs nor LMOOCs have been much studied up to now.

#### **4.3 MOOC Platforms**

21 of the selected studies (38.18%) gave information concerning the different existing MOOCs (e.g. Mailhes and Raspa 2015; Moya 2013; Vadillo and Bucio 2018). Many platforms may say they offer MOOCs, although they are mainly platforms hosting 'traditional' online courses. The studies carried out by Calvo, Rodríguez, and Fernández (2016), Matías and Pérez (2014) and Ruiz (2013) focused on the most prestigious and best-regarded ones:

Coursera ([www.coursera.org](http://www.coursera.org)) stands out as one of the biggest and most popular education platforms. Started in 2012 and developed by the University of Stanford, it offers courses and expert certificates in several languages organized by more than 130 institutions. edX ([www.edx.org](http://www.edx.org)), probably the second most powerful, was founded in 2012 by the Massachusetts Institute of Technology and runs over 500 courses on Social Sciences, Humanities and Computer Sciences.

In the field of English language, FutureLearn ([www.futurelearn.com](http://www.futurelearn.com)) must be mentioned as the first English MOOC platform promoted by the Open University and set up in 2012, although since 2016, MOOCs organized by international associations from all over the world can also be found. In this light, Khan Academy ([www.khanacademy.org](http://www.khanacademy.org)) is also relevant, a non-profit organization created in 2006 which in its origins offered online tools in the form of Youtube videos; nowadays, these videos have evolved into MOOC-like online resources available in English, Spanish, Italian and many other languages. Conversely, and although it is not as prestigious as the aforementioned, MiríadaX ([www.miriadax.net/home](http://www.miriadax.net/home)) is the most powerful platform when it comes to Spanish and Portuguese as it is oriented to an Ibero-American level.

Apart from these internationally well-renowned platforms, there are some other alternatives: (i) Udacity ([www.udacity.com](http://www.udacity.com)), founded in 2011, which offers courses mainly related to computing and software development; (ii) Canvas Network ([www.canvas.net](http://www.canvas.net)), which presents MOOCs for teachers, students and universities from all over the world with an international perspective; and (iii) UniMOOC ([www.unimooc.com](http://www.unimooc.com)), born in Spain and directed to entrepreneurs.

All of these MOOC platforms offer verified certificates of achievement after finishing a course, though these are not for free as the rest of the materials proffered; this is one of the negative aspects of almost every platform.

#### **4.4 Strengths and Limitations of MOOCs**

A high number of studies give information about MOOCs benefits and limitations: 33 of the 55 selected studies (60%) delved into the merits and pitfalls of MOOCs (e.g. Callejo-Gallego and Agudo-Arroyo 2018; Gil and Martínez 2018; Pernías and Luján 2013). All of them concurred that they are a revolution in education, although many others consider them as a trend where not all comments are positive.

One of their main weaknesses is students' identification and the demonstration on whether someone doing a course completes it. In MOOCs, a large proportion of the participants enrol in these courses to increase their professional competences –or even as a hobby–; however, it is necessary to identify who the users are, and, to do so, platforms must develop more effective identification tools.

Another critique is, as Zapata-Ros (2013) points by citing a study carried out by the University of Pennsylvania, the high dropout rates. This project analysed dropout rates of more than one million participants enrolled in sixteen Coursera MOOCs offered from June 2012 to June 2013; findings showed that 50% of enrolled users abandoned the course before concluding their first stage, and only 4% finished it. Additionally, there is more research revealing MOOCs' high dropout rates (Onah, Sinclair, and Boyatt 2014; Poy and Gonzales-Aguilar 2014; SCOPEO 2013). Massive dropout depends fundamentally on the enormous differences among the students who decide to join a MOOC. In relation to this, Hill (2013) identifies four types of users: (i) lurkers, who basically observe a few items of the course and then abandon it; (ii) passive participants, who only revise some contents, generally videos and quizzes, and participate neither in activities nor in discussion forums; (iii) active participants, who are fully compromised with their participation; and (iv) drop-ins, who partially or fully participate in certain topics within a course without the intention of completing it entirely. Even though there are few studies about the exact percentage of each type of students in the courses, a considerable number of enrolled users has informally acknowledged their interest in MOOCs was out of curiosity.

On the other hand, there are several disadvantages related to the assessment process of these courses. A considerable amount of MOOC assessment is implemented through automated test-type exams (mainly with multiple-choice questions), which ensures that information provided by users is quickly received by the MOOC platform. However, these tests seem not to be enough if we consider the importance of autonomous learning and collaboration among participants. In this light,

many detractors point out the rigid assessment structure of MOOCs and the fact that it pushes the limit of an economic conception of education.

Another objection links with the absence of (personal) tutors or mentors. This lack of a person guiding the learning process makes students' progress harder. Consequently, this situation may create a feeling of loneliness or frustration, as enrolled participants may feel nobody will clarify their doubts or solve their problems. Although autonomy is one of the basics of MOOCs and that being a self-educated/autonomous person is a worthy skill nowadays, it must be considered that not every person may have the necessary abilities and skills to develop their learning process in a self-directed way.

The last remarkable controversy consists of the hidden business model they are based on, something that can be seen in platforms' efforts to earn money through certificates (Teplechuk 2013). MOOC contents and materials are usually free of charge, whereas certificates of achievement are not. If a participant who has finished a course wants a diploma confirming they have completed every task and accomplished the course objectives, they may pay, generally, between 40€ and 80€ (although every platform sets its price). Withal, considering that the student has obtained such certificate, the majority of companies do not give MOOCs the recognition they deserve as quality education tools, nor most of educational institutions give education credits.

Despite their weaknesses, MOOCs have been revealed to have an extra value that makes them relevant resources. SCOPEO (2013) gathers some advantages of this new methodology. Firstly, MOOCs foster the democratization of knowledge: access to quality information/knowledge is no longer a privilege of a few people, but it starts to be accessible for everyone. This is thanks to the universities organizing these courses, which submit materials and contents available to everyone. Along the same lines, these courses allow users to create a learning community with the possibility of interacting with thousands of people: course-mates play a central role as they facilitate knowledge construction. Being in contact with participants who share one's interests and professional profiles helps MOOCs' assets go beyond the fulfilment of an isolated course, as the users' networks created will keep providing benefits for personal, academic and/or professional enrichment once it is completed.

Secondly, another strength of MOOCs dwells in the fact that they enhance continuous learning. They constitute a great instrument for permanent and lifelong learning as they offer users the possibility of enhancing their knowledge about a certain topic or the chance to discover a completely new one.

Together with the main strengths of MOOCs, it is necessary to highlight that their potential outstrips the aforementioned advantages. Besides, they respond to the high demand for specialized education requested by undergraduate students, a quality training supported by prestigious and well-regarded universities/institutions. Additionally, MOOCs promote new methodologies and innovative educational practices, as well as the latest evaluation methods, including co-assessment and peer-assessment, not so commonly used in traditional university teaching.

The positive points of these courses are higher in developing countries, particularly in those regions where the access to education is pretty restricted and where young people and adults are marginalised due to the lack of education options. MOOCs allow them to acquire knowledge for a

reduced cost –which by other means would not be accessible for them, either for time constraints or distance to the educational institution (Ávila 2014).

Ultimately, it can be affirmed that these courses present possibilities that benefit not only students but also universities (as they become more prestigious, make money through certificates, and use their own professors as diffusers of educational materials) and companies (as they create digital platforms and obtain profits by being intermediaries in contents and certificates issuance) (Medina-Salguero and Aguaded 2014).

Table 8. MOOCs' limitations and strengths

Possibilities and strengths	Weaknesses and limitations
- Response to the demand for specialized university education	- Use of content-centred methodologies
- Foster new methodologies and innovative educational practices	- Massive teaching, no personalization nor differentiation
- Contents reliability/quality	- Content standardization
- Innovative assessment processes (co-assessment, pair assessment, ...)	- Devaluation of teacher's role
- Flexibility and free access to academic offerings	- Digital knowledge and self-regulated learning needed
- Democratization of teaching/learning	- Implementation of activities established by course designer
- International projection of teachers	- No orientation; they can turn into a mere repository of learning materials
- Possibility for universities to earn money by emitting certificates	

Source: Own elaboration

#### 4.5 Specialization Courses

None of the selected studies presented information about the specialization courses despite being a remarkable feature of MOOCs. They consist of a series of between three and five specific courses about a particular topic, which enable users to develop more advanced skills in that specific field. The forerunner of this modality was Coursera, although, after the success of the idea, other platforms (i.e., edX and MiríadaX) decided to imitate this plan. They cover nowadays issues that generate a high demand on the part of frequent users of MOOC platforms. Nevertheless, Coursera and other media develop specialization courses about manifold areas (e.g. Information Science, Marketing, Cybersecurity or App Development).

Each specialization course implies overcoming every single component and culminate with a final test or project in which students must apply what they have learnt. Those who complete the courses and the assessment process receive an academic diploma. However, if an isolated MOOC certificate costs between €40 and €80 depending on the platform, obtaining one for a specialization course can usually involve a price ranging from €200 to over €500.

The advantages of these programs take root in the fact that they concentrate the individual strengths of MOOCs composing them, and they offer simultaneously the possibility of going far beyond in the development of skills in a specific subject. This way, the progressive implementation

of the courses allows: to access to a larger amount of quality information related to the area of specialization, to strengthen personal and professional networks (as they relate a larger number of participants), to foster personal enrichment (as specialization courses aim to satisfy the user's interests), to facilitate continuous learning, and to increase knowledge.

Even though it would be advisable for MOOC platforms to continue improving specialization courses, it could be deduced that, despite the substantial economic outlay that enrolling in this modality supposes, they are an interesting extension of MOOCs and, like isolated courses, they must be studied from scientific literature and valued as powerful educational resources.

#### **4.6 Didactic Applications of MOOCs for Foreign Language Learning**

Multiple studies have shown that MOOCs have great potential in learning processes (Callejo-Gallego and Agudo-Arroyo 2018; Escudero and Núñez 2017; Ramírez-Fernández 2015b; Shen and Kuo 2015); however, the literature is still scarce when analysing the potential of MOOCs for Foreign Language Learning –in fact, only 13 of the 55 selected studies (26.64%) presented information in this respect (e.g. Chacón-Beltrán 2017; Varela and Burbat 2017; Sclater 2016).

MOOCs are acquiring relevance in every area of education since they offer permanent training in constant evolution, follow an autonomy- and individualization-based teaching-learning model, and provide free and massive access to knowledge. For these reasons, teachers, in general, must understand the wide repertoire of learning possibilities that these courses offer; additionally, Foreign Languages Teachers, in particular, should be aware of the potential of this tool in the fields of language acquisition, Foreign Language Teaching, and the development of communicative/linguistic competences. In this sense, more studies need to be carried out on the possibilities of MOOCs in this fields because, as Jitpaisarnwattana et al. (2019, p. 21) state, they “have the potential to successfully support language learning on a large scale and to provide researchers and practitioners with unique insights into the language learning process”.

In this regard, many studies have emphasised the relevance of MOOCs for education:

- “MOOCs fill a large gap for many who simply want to participate in rich learning opportunities without the need to be admitted to a course of study or applying to a particular institution.
- Professionals who enrol in MOOCs to further their own learning can also contribute to the learning of others via mentor roles, or even as part of the teaching team.
- When more learners and institutions participate in MOOCs by sharing scientific research and other content, it leads to sustainability of the MOOC ecosystem over time”. (Johnson, Adams, Cummins, and Estrada 2012, p. 11).

MOOCs require a correct design and an appropriate content selection, which reveals the necessity of adjusting to a series of guidelines in order to achieve positive results. Once a well-planned course is obtained, it is essential to go in depth into the didactic methodology proposed by MOOCs, which must be considered as one of the new 21<sup>st</sup>-century educational challenges. Nevertheless, MOOCs' didactic implications have to be clarified; following Table 7, it can be

understood in which measure MOOCs constitute a good educational approach. Obviating xMOOCs –massive model– and focusing on cMOOCs –connective model–, these courses are based on and contribute to The Four Pillars of Learning (Delors 1998), and so they seem to be a good option for effective learning. Furthermore, LMOOCs constitute the best option for Foreign Language Learning –in fact, as Shah (2018) puts it, there are currently more than 200 LMOOCs being developed all around the world by Coursera, EdX and Udacity, among others; however, they are still in their infancy (Jitpaisarnwattana et al. 2019).

Using MOOCs implies acting in favour of active and collaborative learning since knowledge is shared with course-mates; moreover, learning is built by the user step by step (also known as learning by doing). Certainly, the implementation of the tasks and use of the resources depend directly on participants' implication and their relationships with the rest of the users; however, the intrinsic motivational component of MOOCs seems to produce enough students' participation in order to create knowledge. Besides, using them supposes a way of lifelong learning.

These implications and applications of MOOCs in relation to their educational opportunities are fundamentally the reasons why they are starting to be considered (Cabero 2015).

## 5. CONCLUSIONS AND FUTURE RESEARCH

It is undoubtable the changing tendency of the current social, economic and educational context due to technological advances. In this setting, new technological resources are transforming traditional conceptions of education and acquiring a remarkable relevance over the last decades, having started to be included in universities' curricula.

This paper has accomplished a systematic literature review on the origins and concept of MOOCs, as well as related concepts like types, main platforms offering them and their possibilities. It has analysed 55 relevant studies published between 2012 and 2019 revealing how these courses have become a revolution since their emergence at the beginning of the decade. Studies such as Ávila (2014), Medina-Salguero and Aguaded (2014) or SCOPEO (2013) have revealed their multiple benefits – the new methodologies and innovative educational practices they foster, their flexibility and free access, and the reliability of their contents; however, many of their limitations (i.e., the use of content-centred methodologies or their massive teaching with no personalization or differentiation between user) still need to be faced to get the most out of these courses.

This systematic review has also unveiled some issues concerning a lack of research on certain aspects of MOOCs. For instance, none of the 55 selected documents addressed the concept of specialization course despite their advantages for learning (they allow users to go beyond the possibilities of an isolated MOOC and develop more skills in a specific subject).

Another finding entails the scarce study of the potential of MOOCs for (Foreign) Language Learning. MOOCs' innovative nature is undeniable as shown in the scientific literature (cf. Lee, Watson and Watson 2019; Zhu, Sari and Lee 2018) since their features, i.e., autonomous and equal learning, quality contents, flexibility, and adaptation to user's needs, and LMOOCs in particular, provide an ideal environment for language learning (Jitpaisarnwattana et al. 2019). For this reason, it is necessary to keep on revising their possibilities in the field (Perifanou and Economides 2014).

Finally, research on the possibilities of brand-new NOOCs needs to be extended since the reduced amount of time they require can help those users who seek for a fast yet effective way of learning.

## REFERENCES

- Aguaded, I. (2013). The MOOCs Revolution: A New Form of Education from the Technological Paradigm? *Comunicar*, 21(41), 7-8. <http://www.doi.org/10.3916/C41-2013-a1>.
- Ávila, J. F. (2014). *Importancia actual y ventajas de los MOOC*. [Blog post]. Retrieved from <https://bit.ly/1mhBgCr>.
- Baglieri, D., Baldi, F., & Tucci, C. (2018). University Technology Transfer Office Business Models: One Size does NOT Fit All. *Technovation*, 76(1), 51-63. Retrieved from <https://bit.ly/2JXPTZr>.
- Bárcena, E., & Martín-Monje, E. (2014). Introduction. Language MOOCs: An Emerging Field. In E. Martín-Monje & E. Bárcena (Eds.), *Language MOOCs: Providing Learning, Transcending Boundaries* (pp. 1-10). Berlin: De Gruyter Open. Retrieved from <https://bit.ly/30ZWQjV>.
- Bardin, L. (2013). *L'analyse de contenu*. Paris: Presses Universitaires de France.
- Brouns, F., Bohuschke, F., Pedrosa, R., Fueyo, A., García, V., Pelayo, C., & Fano, S. (2015). *D2.6 Web 2.0 Requirements Analysis*. ECO Project.
- Brouns, F., Mota, J., Morgado, L., Jansen, D., Fano, S., Silva, A., & Teixeira, A. (2014). A Networked Learning Framework for Effective MOOC Design: The ECO Project Approach. In A. M. Teixeira, & A. Szücs (Eds.), *8<sup>th</sup> EDEN Research Workshop. Challenges for Research into Open and Distance Learning: Doing Things Better: Doing Better Things*. Oxford / Budapest: EDEN.
- Buhl, M., & Andreasen, L. B. (2018). Learning Potentials and Educational Challenges of Massive Open Online Courses (MOOCs) in Lifelong Learning. *International Review of Education*, 64(2), 151-160. <http://www.doi.org/10.1007/s11159-018-9716-z>.
- Cabero, J. (2015). Visiones educativas sobre los MOOC. *RIED*, 18(2), 39-60. <http://www.doi.org/10.5944/ried.18.2.13718>.
- Callejo-Gallego, J., & Agudo-Arroyo, Y. (2018). MOOC: Valoración de un futuro. *RIED*, 21(2), 219-241. <http://www.doi.org/10.5944/ried.21.2.20930>.
- Calvo, M. A., Rodríguez, C., & Fernández, E. (2016). ¿Cómo son los MOOC sobre educación? Un análisis de cursos de temática pedagógica que se ofertan en castellano. *Digital Education Review*, (29), 298-311. <http://www.doi.org/10.1344/der.2016.29.298-311>.
- Castaño, C., & Cabero, J. (2013). *Enseñar y aprender en entornos m-learning*. Madrid: Síntesis.
- Castells, M., & Cardoso, G. (2005). *The Network Society. From Knowledge to Policy*. Washington: Johns Hopkins Center for Transatlantic Relations.
- Chacón-Beltrán, R. (2017). The Role of MOOCs in the Learning of Languages: Lessons from a Beginners' English Course. *Porta Linguarum*, (28), 23-35. Retrieved from <https://bit.ly/2O8UuNK>.
- Chiappe-Laverde, A., Hine, N., & Martínez-Silva, J. A. (2015). Literature and Practice: A Critical Review of MOOCs. *Comunicar*, 22(44), 9-18. <http://www.doi.org/10.3916/C44-2015-01>.
- Clark, D. (2013, 16 April). *MOOCs: Taxonomy of 8 Types of MOOC* [Blog post]. Retrieved from <https://bit.ly/2DDvB6i>.



- Cortés, J. A., & Lozano, J. O. (2014). Social Networks as Learning Environments for Higher Education. *International Journal of Interactive Multimedia and Artificial Intelligence*, 2(7), 63-69. <http://www.doi.org/10.1017/S0007485300030881>.
- Delors, J. (1998). *Learning: The Treasure within. Report to UNESCO of the International Commission on Education for the Twenty-First Century*. Paris: UNESCO Publishing.
- Durall, E., Gros, B., Maina, M., Johnson, L., & Adams, S. (2012). *Perspectivas tecnológicas: educación superior en Iberoamérica 2012-2017*. Austin, TX: The New Media Consortium.
- Ebben, M., & Murphy, J. S. (2014). Unpacking MOOC Scholarly Discourse: A Review of Nascent MOOC Scholarship. *Learning, Media and Technology*, 39(3), 328-345. <http://www.doi.org/10.1080/17439884.2013.878352>.
- Escudero, A., & Núñez, A. A. (2017). Impacto del fenómeno MOOC: La personalización en la educación superior. *RIDE. Revista Iberoamericana para la Investigación y el Desarrollo Educativo*, 8(15), 279-310. <http://www.doi.org/10.23913/ride.v8i15.300>.
- European Commission. (2018). *European Digital Competence Framework for Citizens (DigComp)*. Retrieved from <https://bit.ly/2SSvOCr>.
- Fano, S., Fueyo, A., & Osuna, S. (2016). MOOC Development Policies: The ECO Project in the European and Spanish Context. In D. Jansen (Ed.), *European Policy Response on MOOC Opportunities* (pp. 83-93). Brussels: EADTU. Retrieved from <https://bit.ly/2fex60B>.
- Fernández, J. & Webster, S. (2014). From OCW to MOOC: Deployment of OERs in a Massive Open Online Course. The Experience of Universidad Carlos III de Madrid. *Open Praxis*, 6(2), 145-158. <http://www.doi.org/10.5944/openpraxis.6.2.115>.
- García, L. (2015). ¿...y antes de los MOOC? *Revista Española de Educación Comparada*, (26), 97-115. <http://dx.doi.org/10.5944/reec.26.2015.14483>.
- Gil, J., & Martínez, J. (2018). El empoderamiento del alumnado en los sMOOC. *Revista Complutense de Educación*, 29(1), 43-60. <http://www.doi.org/10.5209/RCED.51932>.
- Gil-Jaurena, I., & Domínguez, D. (2012). Open Social Learning y educación superior. Oportunidades y retos. *Revista Iberoamericana de Educación*, 60, 191-203. <http://www.doi.org/10.35362/rie600452>.
- Gómez, P., García, A., & Monge, C. (2016). *La cultura de los MOOC para la innovación en educación superior desde contextos iberoamericanos*. Madrid: Síntesis.
- Gómez, P., Monge, C., & Sebastián, E. (2016). Calidad de un MOOC sobre inclusión educativa: aplicación de varios instrumentos e indicadores. *Revista Ibero-Americana de Estudos Em Educação*, 11(25), 342-349. <http://www.doi.org/10.21723/RIAEE.v11.esp.1.p342>.
- Guri-Rosenblit, S. (2018). E-Teaching in Higher Education: An Essential Prerequisite for e-Learning. *Journal of New Approaches in Educational Research*, 7(2), 93-97. <http://www.doi.org/10.7821/naer.2018.7.298>.
- Hill, P. (2013). *The Four Student Archetypes Emerging in MOOCs*. [Blog post]. Retrieved from <https://bit.ly/2NB5qDI>.
- ICETFC. (1996). *Learning: The Treasure Within*. Retrieved from <https://bit.ly/1ysRWHM>.
- INTEF. (2016). *¿Qué es un NOOC?* Retrieved from <https://bit.ly/36ct3ah>.

- Jalali, S., & Wohlin, C. (2012). Systematic Literature Studies: Database Searches vs. Backward Snowballing. In P. Runeson, M. Höst, E. Mendes, A. Andrews, & R. Harrison (Eds.), *ESEM '12 2012 ACM-IEEE International Symposium on Empirical Software Engineering and Measurement Lund, Sweden - September 19 – 20, 2012* (pp. 29–38). New York: ACM. Retrieved from <https://bit.ly/2JGulll>.
- Jitpaisarnwattana, N., Reinders, H., & Darasawang, P. (2019). Language MOOCs: An Expanding Field. *Technology in Language Teaching & Learning*, 1(1), 21-32. <http://www.doi.org/10.29140/tltl.v1n1.142>.
- Johnson, L., Adams, S., Cummins, M., & Estrada, V. (2012). *Technology Outlook for STEM+Education 2012-2017: An NMC Horizon Report Sector Analysis*. Austin, TX: The New Media Consortium. Retrieved from <https://bit.ly/2LSN6mZ>.
- Johnson, L., Adams, S., Cummins, M., Estrada, V., Freeman, A., & Ludgate, H. (2013). *NMC Horizon Report: 2013 Higher Education Edition*. Austin, TXs: The New Media Consortium. Retrieved from <https://bit.ly/2XVbnjt>.
- Johnson, L., Adams, S., Cummins, M., Freeman, A., Ifenthaler, D., & Vardaxis, N. (2013). *Technology Outlook for Australian Tertiary Education 2013-2018: An NMC Horizon Project Regional Analysis*. Austin, TX: The New Media Consortium. Retrieved from <https://bit.ly/2y3DoG8>
- Kitchenham, B., Brereton, O. P., Budgen, D., Turner, M., Bailey, J., & Linkman, S. (2009). Systematic literature reviews in software engineering – A systematic literature review. *Information and Software Technology*, 51(1), 7-15. <http://www.doi.org/10.1016/j.infsof.2008.09.009>.
- Kovanović, V., Joksimović, S., Gašević, D., Siemens, G., & Hatala, M. (2015). What Public Media Reveals about MOOCs: A Systematic Analysis of News Reports. *British Journal of Educational Technology*, 46(3), 510-527. <http://www.doi.org/10.1111/bjet.12277>.
- Lee, D., Watson, S. L., & Watson, W. R. (2019). Systematic Literature Review on Self-Regulated Learning in Massive Open Online Courses. *Australasian Journal of Educational Technology*, 31(1), 28-41. <http://www.doi.org/10.14742/ajet.3749>.
- Liyaganawardena, T. R., Adams, A. A., & Williams, S. A. (2013). MOOCs: A Systematic Study of the Published Literature 2008-2012. *The International Review of Research in Open and Distance Learning*, 14(3), 202-227. Retrieved from <https://bit.ly/32pV0u0>.
- Mailhes, V., & Raspa, J. (2015). MOOC: De la devolución educativa a la supervivencia MOOC: from Educational Feedback to Survival. *Letra. Imagen. Sonido: Ciudad Mediatizada*, 7(14), 75-91. Retrieved from <https://bit.ly/2XVSlcT>.
- Matías, H., & Pérez, A. (2014). Los Cursos en Línea Masivos y Abiertos (MOOC) como alternativa para la educación a distancia. *GECONTEC: Revista Internacional de Gestión del Conocimiento y la Tecnología*, 2(2), 41-49. Retrieved from <https://bit.ly/2GkVx7a>.
- Medina-Salguero, R., & Aguaded, I. (2014). Los MOOC en la plataforma educativa MiriadaX. *Profesorado. Revista de Currículum y Formación del Profesorado*, 18(1), 137-153. Retrieved from <https://bit.ly/2xzE3Q5>.
- Moya, M. (2013). Los MOOC/COMA: un nuevo reto educativo para el siglo XXI. Una metodología didáctica para el aprendizaje en línea. *Virtualis*, 4(8), 84-103. Retrieved from <https://bit.ly/2YgF4uQ>.

- Munari, F., Sobrero, M., & Toschi, L. (2018). The University as a Venture Capitalist? Gap Funding Instruments for Technology Transfer. *Technological Forecasting and Social Change*, 127(1), 70-84. <http://www.doi.org/10.1016/J.TECHFORE.2017.07.024>.
- Ochoa, R., & Neves, L. (2016). sMOOC. Necesidades educativas especiales – uma experiência em língua portuguesa integrada num modelo de aprendizagem colaborativa europeu. In R. Roig-Vila (Ed.), *Tecnología, innovación e investigación en los procesos de enseñanza-aprendizaje* (pp. 974-982). Barcelona: Octaedro.
- Okoli, C. (2015). A Guide to Conducting a Standalone Systematic Literature Review. *Communications of the Association for Information Systems*, 37(43), 879-910. Retrieved from <https://bit.ly/2QXmvFn>.
- OpenupEd. (2014). *Definición Massive Open Online Courses (MOOCs)*. Retrieved from <https://bit.ly/1DrMxXy>.
- Onah, D., Sinclair, J., & Boyatt, R. (2014). Dropout Rates of Massive Open Online Courses: Behavioural Patterns. In L. Gómez, A. López, & I. Candel (Eds.), *6<sup>th</sup> International Conference on Education and New Learning Technologies* (pp. 5825-5834). Barcelona: IATED Academy.
- Osuna-Acedo, S., Marta-Lazo, C., & Frau-Meigs, D. (2018). From sMOOC to tMOOC, Learning towards Professional Transference: ECO European Project. *Comunicar*, 27(55), 105-114. <http://www.doi.org/10.3916/C55-2018-10>.
- Palacios, F. J. (2018). Los MOOC como instrumentos para la formación en lengua inglesa del alumnado de sexto curso de Educación Primaria. In M. I. Amor, M. Osuna, & E. Pérez (Eds.), *Fundamentos de enseñanza y aprendizaje para una educación universal, intercultural y bilingüe* (pp. 155-160). Barcelona: Octaedro.
- Palacios, F. J., & Huertas, C. A. (2016). MOOCs y formación del profesorado de segundas lenguas: propuesta de evaluación. *Skopos*, 7, 151-167. Retrieved from <https://bit.ly/2Ye2IYN>.
- Pérez, L., Jordano, M., & Martín-Cuadrado, A. M. (2017). Los NOOC para la formación en competencias digitales del docente universitario. Una experiencia piloto en la Universidad Nacional de Educación a distancia (UNED). *RED. Revista de Educación a Distancia*, (55), 1-35. <http://www.doi.org/10.6018/red/55/1>.
- Perifanou, M. A., & Economides, A. A. (2014). MOOCs for Foreign Language Learning: An Effort to Explore and Evaluate the First Practices. In L. Gómez, A. López, & I. Candel (Eds.), *Proceedings of INTED2014 Conference 10<sup>th</sup>-12<sup>th</sup> March 2014, Valencia, Spain* (pp. 3561-3570). Valencia: IATED Academy. Retrieved from <https://bit.ly/2LIFaWr>.
- Pernías, P., & Luján, S. (2013). Los MOOC: orígenes, historia y tipos. *Comunicación y Pedagogía*, (269-270), 41-48. Retrieved from <https://bit.ly/2FdAH9M>.
- Poy, R., & Gonzales-Aguilar, A. (2014). Factores de éxito de los MOOC: Algunas consideraciones críticas. *Revista Ibérica de Sistemas y Tecnologías de Información*, (E1), 105-118. <http://www.doi.org/10.4304/risti.e1.105-118>.
- Ramírez-Fernandez, M. B. (2015a). Propuesta de certificación de calidad de la oferta española educativa de cursos MOOC realizada por el Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado. *International journal of Educational Research and Innovation*, (3), 121-133. Retrieved from <https://bit.ly/2cxTJLj>.

- Ramírez-Fernández, M. B. (2015b). La valoración de MOOC: Una perspectiva de calidad. *RIED*, 18(2), 171-195. <http://www.doi.org/10.5944/ried.18.2.13777>.
- Rinatovna, G., Vladimirovna, E., Bizyanova, F., & Haidar, I. (2017). Moosle-ee: Massive Open Online Social Learning Environment for English eLearning System. *Revista San Gregorio*, (Extra 20), 6-13. Retrieved from <https://bit.ly/32FT94r>.
- Rolfe, V. (2015). A Systematic Review of the Socio-Ethical Aspects of Massive Online Open Courses. *European Journal of Open, Distance and e-Learning*, 18(1), 52-71. <http://www.doi.org/10.1515/eurodl-2015-0004>.
- Ruiz, P. (2013). *Presente y futuro de los Massive Open Online Courses (MOOC): Análisis de la oferta completa de cursos de las plataformas Coursera, EdX, Miriada X y Udacity* (Master's Thesis). Universidad Complutense de Madrid, Madrid.
- Sagar, C. (2016). TICs y aprendizaje de idiomas: ¿existe algún sistema de aprendizaje digital y conectado? In R. Roig-Vila (Ed.), *Tecnología, innovación e investigación en los procesos de enseñanza-aprendizaje* (pp. 1840-1847). Barcelona: Octaedro.
- Sanchez-Gordon, S., & Luján-Mora, S. (2018). Research Challenges in Accessible MOOCs: A Systematic Literature Review 2008-2016. *Universal Access in the Information Society*, 17(4), 775-789. <http://www.doi.org/10.1007/s10209-017-0531-2>.
- Sangrà, A., González-Sanmamed, M., & Anderson, T. (2015). Meta-Analysis of the Research about MOOC during 2013-2014. *Educación XXI*, 18(2), 1-28. <http://www.doi.org/10.5944/educxx1.14808>.
- Santos-Hermosa, G., Ferrán-Ferrer, N., & Abadal, E. (2012). Recursos educativos abiertos: repositorios y uso. *El profesional de la información*, 21(2), 136-145. <http://www.doi.org/10.3145/epi.2012.mar.03>.
- Sanz, M., & Pantoja, A. (2015). Formación permanente del profesorado en las comunidades de práctica. *Aula de encuentro*, 1(17), 105-130. <http://www.doi.org/10.13140/RG.2.1.3946.9925>.
- Sclater, N. (2016). MOOCs, Open Educational Resources and Social Networking: Bridging the Gap between Informal and Formal Learning. *Revista Mediterránea de Comunicación*, 7(2), 9-19. <http://www.doi.org/10.14198/MEDCOM2016.7.2.1>.
- SCOPEO. (2013). *Scopeo Report 2. MOOC: Estado de la situación actual, posibilidades, retos y futuro*. Salamanca: Universidad de Salamanca-Centro Internacional de Tecnologías Avanzadas.
- Shah, D. (2018, December 26). *Year of MOOC-Based Degrees: A Review of MOOC Stats and Trends in 2018*. [Blog post]. Retrieved from <https://bit.ly/2YjzPKZ>.
- Shen, C.-W., & Kuo, C.-J. (2015). Learning in Massive Open Online Courses: Evidence from Social Media Mining. *Computers in Human Behavior*, 51, 568-577. <http://www.doi.org/10.1016/j.chb.2015.02.066>.
- Siemens, G. (2012a). *What is the Theory that Underpins our MOOCs?* Retrieved from <https://bit.ly/2gfhmXh>.
- Siemens, G. (2012b). *MOOCs are Really a Platform?* [Blog post]. Retrieved from <https://bit.ly/1rPRHDt>.

- Tafazoli, D., Gómez, M. E., & Huertas, C. A. (2018). A Cross-Cultural Study on the Attitudes of English Language Students Towards Computer-Assisted Language Learning. *Teaching English with Technology*, 18(2), 34-68. Retrieved from <https://bit.ly/2q9YNtB>.
- Tejada, J., & Fernández, K. V. (2018). Nuevos escenarios y competencias digitales docentes. Hacia la profesionalización docente con TIC. *Profesorado, Revista de Currículum y Formación del Profesorado*, 22(1), 25-51. Retrieved from <https://bit.ly/2GQmv7H>.
- Teplechuk, E. (2013). *Emergent models of Massive Open Online Courses: an exploration of sustainable practices for MOOC institutions in the context of the launch of MOOCs at the University of Edinburgh* (Master's Thesis). University of Edinburgh, Edinburgh. Retrieved from <https://bit.ly/2Z5CbKo>.
- Vadillo, G., & Bucio, J. (2018). Un MOOC, muchos MOOC: Diseño multinivel en cursos masivos del área de la salud. *Revista Investigación en Educación Médica*, 7(26), 92-98. <http://www.doi.org/10.22201/facmed.2007865x.2018.26.03>.
- Varela, M. J., & Burbat, R. (2017). Foreign Language Learning with MOOC: Back to the Future? *Revista de Lingüística y Lenguas Aplicadas*, 12, 151-159. <http://www.doi.org/10.4995/rlyla.2017.6564>.
- Vassiliou, A., & Šemeta, A. (2012). Prólogo. In Agencia Ejecutiva en el ámbito Educativo Audiovisual y Cultural (EACEA) (Ed.), *Cifras clave de la enseñanza de lenguas en los centros escolares de Europa – Edición 2012* (pp. 3-4). Brussels: European Commission.
- Veletsianos, G., & Shepherdson, P. (2015). Who Studies MOOCs? Interdisciplinarity in MOOC Research and its Changes over Time. *International Review of Research in Open and Distributed Learning*, 16(3), 1-17. Retrieved from <https://bit.ly/2O9XLfW>.
- Vorobyeva, A. A. (2018). Language Acquisition through Massive Open Online Courses (MOOCs): Opportunities and Restrictions in Educational University Environment. *XLinguae*, 11(2), 136-146. <http://www.doi.org/10.18355/XL.2018.11.02.11>.
- Zapata-Ros, M. (2014). MOOCs, una visión crítica y una alternativa complementaria: La individualización del aprendizaje y de la ayuda pedagógica. *Campus Virtuales*, 2(1), 20-38. Retrieved from <https://bit.ly/2DC70i8>.
- Zhu, M., Sari, A., & Lee, M. M. (2018). A Systematic Review of Research Methods and Topics of the Empirical MOOC Literature (2014-2016). *The Internet and Higher Education*, 37, 31-39. <http://www.doi.org/10.1016/J.IHEDUC.2018.01.0>.