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a través del análisis de indicadores de alto impacto**

**Research on Heritage Education. Evolution and Current State
Through analysis of High Impact Indicators**

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La investigación en Educación Patrimonial. Evolución y estado actual a través del análisis de indicadores de alto impacto

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Abstract

Introduction: The topic heritage education has considerably evolved in the last few years. While having a longer tradition in Latin American countries, in Spain it took off in 2003, when a research trend emerged which, in the wake of developments in heritage teaching and museum studies, undertook a deep revision of heritage education practices and enlarged this concept so as to include a more comprehensive view of this area of knowledge and transform it, after more than a decade of research, into a scientific discipline. **Method:** The present paper analyses the evolution of research on heritage education in Spain as reflected in high-impact indicators: essentially all standardized landmarks of scientific research that apply to every field of knowledge and can be extrapolated to other contexts. In order to do this, we will focus on the completion of doctoral dissertations, competitive projects awarded funding under national R&D&I calls for proposals and the publication of scientific papers in internationally recognised databases WOS and Scopus. **Results:** The several analyses conducted on these

⁽¹⁾ Funding: MINECO, proyectos EDU2012-37212, EDU2015-65716-C2-1-R y EDU2015-65716-C2-2-R

three areas of scientific production —both statistic-descriptive and content-based— enable us to learn about the timeline of PhD dissertations produced in Spain, competitive projects and papers published in impact journals, as well as the distribution of these outcomes across the several lines of research; they also make it possible to draw cross-country comparisons of research outputs on heritage education as reflected in the WOS and Scopus databases and to trace the evolution of scientific production by fields and lines of research in order to define several genealogical approaches to research in heritage education. Conclusions: Spain has positioned itself as the world's leading country in terms of scientific output in the field of heritage education by developing at least four lines of research involving the following topics: heritage communication, heritage teaching, heritage education and curricular aspects related to heritage and teacher training programmes.

Key words: heritage teaching, educational research, doctoral dissertations, scientometric indicators, bibliometric indicators, evaluation of scientific activities, fundamental research

Resumen

Introducción: El tópic *educación patrimonial* ha evolucionado mucho en los últimos años. Aunque con mayor tradición en el ámbito iberoamericano, en España comienza su despegue a partir del año 2003, cuando se inicia una corriente de investigación que, tomando referentes de didáctica del patrimonio y museum studies, plantea una amplia revisión de la educación patrimonial y acoge en el concepto una visión más completa de este ámbito de conocimiento hasta configurarla, tras más de una década de investigaciones, como una disciplina científica. Método: Se analiza la evolución de la investigación en educación patrimonial en España a través de indicadores de alto impacto, fundamentalmente todos aquellos hitos de investigación científica estandarizados para todas las áreas de conocimiento y homologables a otros contextos. Para ello, consideraremos la producción de tesis doctorales, la obtención de proyectos competitivos en convocatorias nacionales de I+D+i, y la publicación de artículos en las bases de datos de referencia internacionales WOS y Scopus. Resultados: Los diferentes análisis estadístico-descriptivos y del contenido en las tres áreas de producción científica nos permiten conocer la evolución cronológica de la producción de Tesis Doctorales en España, proyectos competitivos o artículos de impacto, su distribución según las diferentes líneas de investigación, la evolución anual comparada por países de la producción de trabajos sobre Educación Patrimonial en las base de datos WOS y Scopus, la evolución de la producción científica global por áreas y por líneas de investigación, hasta definir diferentes enfoques genealógicos de investigación en educación patrimonial. Conclusiones: España se ha situado como primer país en el ámbito internacional en producción científica en materia de educación patrimonial, desarrollando al menos cuatro líneas de investigación en torno a la comunicación del patrimonio,

la didáctica del patrimonio, la educación patrimonial y los aspectos curriculares relacionados con el patrimonio y la formación del profesorado.

Palabras clave: educación patrimonial, didáctica del patrimonio, investigación educativa, tesis doctorales, Indicadores cuantitativos, indicadores bibliométricos, evaluación de actividad científica, investigación fundamental.

Introduction: Texts issued by international organisations as drivers of educational actions in the management of cultural heritage

Tracing the origin of the term heritage education takes us back to Brazil in the 1960s, when Freire's ideas about critical pedagogy exerted a clear epistemological influence. The publication of the *Guia básico de Educação Patrimonial* (Horta, Grumberg & Monteiro, 1999) meant an international breakthrough as well as the consolidation of this approach at government level (IPHAN) with the aim of preserving cultural heritage within the framework of identity, memory and popular culture (Gedeon, 2014).

Apart from these Brazilian sources, the international growth of heritage-related education is tied to the work of UNESCO, whose successive treaties since 1972 gradually assigned a more relevant role to education in the context of cultural heritage management. Already in the *Convention concerning the Protection of the World Cultural and Natural Heritage* a whole chapter is devoted to educational programmes (UNESCO, 1972): an idea that will later inform a series of *Recommendations on Participation by the People at Large in Cultural Life* (UNESCO, 1976). In 2001 significant progress was made by establishing a connection between the concept of identity and education (UNESCO, 2001) –the latter playing a key role among the *Measures to combat intentional destruction of cultural heritage*, whereby States were urged to “endeavour, by all appropriate means, to ensure respect for cultural heritage in society, particularly through educational, awareness-raising and information programmes” (UNESCO, 2003, p. 67).

Also the Council of Europe —through its conventions, declarations and recommendations- has shifted from a residual conception of heritage

education to an understanding of it as an axis of heritage sustainability. The key year in this regard is 1998, when the first recommendation concerning heritage education was issued including the statement that educational actions in the field of heritage provide an ideal way to endow the future with meaning by providing a better understanding of the past. In this recommendation, education is defined from an innovative perspective, since mention is made of a heritage-based teaching method that engages active procedures and interdisciplinary approaches while seeking the integration of several educational areas and the use of the widest possible range of communication and expression modes (UE, 1998, p. 31). In 2005, heritage policies and educational schemes were described as an axis capable of securing our cultural inheritance and promoting dialogue among cultures and religions (UE, 2005, p. 1). Additionally, emphasis was laid on the need to integrate cultural heritage across all educational levels and not necessarily as a subject of study, but rather as a resource (UE, 2005, p. 5).

Heritage education in Spain: from an area of knowledge to a scientific discipline

Conceptually aligned with the above-mentioned international texts, Colom defines heritage education as “the educational action performed on the collective assets possessed by our generation —inherited or acquired assets which we nonetheless want to maintain and preserve, since we either endow them with value or regard them as valuable in themselves” (Colom, 1998, p. 129) [our translation]. Comprising the notions of *transmission* and *inheritance*, his definition underscores the mediating role of education in this process of intergenerational transference. But it was not until 1999 that the term “heritage education” first appeared in the domain of research (Bardavio, 1999), even though the first doctoral dissertation explicitly dealing with the need to give shape to heritage education as a research discipline would not be written until 2003 (Fontal, 2003b). Before that time, the notion of heritage education was basically restricted to heritage-related teaching and, as such, it was dealt with in terms of contents to be included in several other instructional disciplines, specifically in connection with the Social Sciences and Plastic Expression.

Heritage education's take-off as a discipline in its own right resulted in several models which, while often running in parallel, converged over time into a holistic, identity-driven approach (Cuenca, 2002) based on the notion of bonds and relationships between assets and people. Such a conceptual shift indeed reflects the very evolution of the concept of heritage. Thus, the *instrumental or utilitarian model* includes all those proposals related to heritage or heritage management where educational action is purely and instrument or a means to non-educational ends, as we very often see in tourist settings. On the other hand, the *historicist model*, while already caring for education-bound goals and even specific methodologies, focuses exclusively on teaching-learning processes in the sphere of historic heritage, thus attaching importance to the heritage asset itself –especially as regards its conceptual dimension— and promoting academic knowledge about it. The *mediationist model*, in turn, has clear educational goals concerning heritage, since it regards the need for mediation between heritage and society as something inevitable and even independent from other heritage management goals. This model leads to the kind of community-based approaches that are so common in Latin America and is connected to the *symbolic social or identity-based model* insofar as it sees heritage as a key player in the symbolic processes that underpin the construction of identity (Fontal, 2003b, pp.129-158). Finally, when extended and expanded, the latter approach leads to the *bond-based model*: one currently in the making and based on the notion of ties or bonds between heritage assets and people.

High-impact indicators

All of this research work is reflected in the scientific output within this area. In order to assess the latter, which is the main goal of the present paper, we have selected a series of high-impact indicators that will make it possible for us to establish connections between research outputs in the field of heritage education and the latter's surrounding environment. More specifically we will focus on three categories: the completion and public defence of doctoral dissertations, the competitive projects awarded funding under R&D&I calls for proposals and the citation of scientific papers in international reference databases. All three indicators possess special characteristics and also specific limitations, yet they provide broad

parameters regarding level of accomplishment, peer review, competitive context (projects and papers) and commitment to accountability. While it is true that each of these indicators seeks different goals and may be separately questioned as regards its reliability, by performing a triangulation of the data they provide as collected in sectoral studies, it should be possible to produce a valid picture of the current state of research in this area of knowledge and to identify the main lines of inquiry in a way that allows for generalisation.

The main aim of this paper, therefore, is to study and assess the scientific production in the field of *heritage education* by focusing on high-impact indicators. Such an aim involves identifying the main research lines, gauging the international significance of this output and establishing a series of research genealogies that reflect the growth of this field of study and anticipate future lines of inquiry.

Method

For data-collection purposes, we have resorted to specific databases for each type of scientific production. In the case of doctoral dissertations, we have used the *Teseo* database run by Spain's Ministry of Education, Culture and Sports and containing records for all dissertations produced in this country since 1976. For the competitive projects funded in the framework of national research plans, we have used data from the Ministry of Economy and Competitiveness (more specifically, the resolutions awarding grants-in-aid for research projects within the last two national research plans). Finally, regarding the production of scientific papers, we have drawn on databases Web of Science (WOS) and Scopus.

Methods for data analysis

For all three types of scientific production, we have performed descriptive statistical analyses as well as content analyses in order to identify the range of topics and the lines of research that have given shape to heritage education in Spain, with a special focus on the period between 2008 and the present time. However, some data searches have demanded an

extension of this timeline in order for us to learn about previous references and modes or to gather a sounder understanding of historical developments.

TABLE I. Databases, searched periods and methods for data analysis

Type of scientific production	Databases for data-collection	Searchedperiods	Methods for data analysis
Doctoral dissertations	TESEO	1976-2016	Descriptive statistical analysis/ Content analysis
R&D&I projects	SUVIDI	2008-2015	Descriptive statistical analysis/ Content analysis
Scientific papers	WOS SCOPUS	WOS:1980-2016 SCOPUS: 1980-2016	Descriptive statistical analysis/ Impact factor evaluation/ Content analysis

Source: own elaboration

Procedure

The process of data collection and analysis includes a *first phase* where we focus separately on each one of three types of scientific production under scrutiny by performing descriptive statistical analyses after the model proposed by López-Noguero (2002). In order to do so, we have employed both the technique known as subject identification and classification and the search for words in context. We chose to use a categorical classification deriving from normative references developed in previous studies (Fontal, 2011; Fontal 2016a), so that those categories become subject descriptors that in turn guide our sample selection. According to this procedure, such categories were subject to scrutiny and discussion by the “encoding judges” —i.e. the researchers in projects EDU2012-37212² who are experts in educational research methods and acted as “referees who supervised analysis reliability and helped us outline and enrich the several categories” (López-Noguero, 2002, p. 176) [our translation].

In order to generate the latter, we followed the categorising criteria

⁽²⁾ Educación patrimonial en España: consolidación, evaluación de programas e internacionalización del observatorio de educación patrimonial en España (OEPE).

proposed by Berelson (1952) and thus created homogeneous, exhaustive, exclusive objective and pertinent categories. Again following this model, we secured reliability and reproducibility by having the encoding judges apply the same previously defined categories in order to avoid discordant interpretations (Krippendorff, 1997). The level of reliability thus achieved was 93%-95% on Fox's scale (1981). Following once again the model by López-Noguero (2002), we searched for content validity (Fox, 1981) in order for researchers to be able explain the reasons for the proposed categorisation by arguing the case for a number of rules applied in the selection of categories on the basis of homogeneity, inclusion, usefulness and mutual exclusion (López-Noguero, 2002, p. 177).

TABLE II. Subject categorisation

SUBJECT DESCRIPTORS (SDs)	SUBJECT GROUPS (SGs)	LINES OF RESEARCH ³
SD1: Heritage education	SG1: Education/teaching + heritage	LR1: Education and Heritage
SD2: Heritage communication	SG2: Education + museums	LR2: Heritage didactics
SD3: Heritage dissemination	SG3: Heritage education	LR3: Heritage education
SD4: Heritage interpretation	SG4: Heritage didactics/didactic museography	LR4: Heritage, the curriculum and teachers
SD5: Heritage teaching	SG5: Heritage interpretation/communication/dissemination	
SD6: Heritage didactics	SG6: Processes of heritagisation/identity construction	
SD7: Didactic museography		
SD8: Didactic musealisation		
SD9: Heritagisation		
SD10: Identity construction		

Source: own elaboration

⁽³⁾ After conducting a case-by-case analysis, the correspondence between SGs and RLs is as follows: Cases in SG1+ cases in SG2 + cases in SG4 + cases in SG5 + cases in SG6 = L1; cases in SG4 + SG5 = L2; SG3 + cases in SG6 = L3; cases SG1 + cases SG4 = L4.

During the *second phase* of our study —and on the basis of results thus obtained— we performed a triangulation (Arias, 2000) that enabled us to identify a number of active productive hubs, their relationships and their degree of incidence. In this way we were ultimately able to arrange them into several research genealogies in the field of heritage education. Next follows a series of additional details concerning the procedure used for each type of scientific production:

Doctoral dissertations

We conducted our search by tracing the subject descriptors (See II) in the TESEO database entries for titles and abstracts. Additionally, and bearing in mind the specific limitations of this database, we performed an extended search by dissertation supervisors. Once the set of dissertations related to heritage and education had been adequately selected, the sample was further cleaned up following a critical reading of abstracts by focusing on dissertations with a clear intent to analyse heritage-related educational processes.

Competitive research projects

Using the same parameters, we downloaded all final resolutions by the Subdirectorate General for Research Projects (Subdirección General de Proyectos de Investigación) at the Ministry of Economy and Competitiveness (formerly called Ministry of Economy and Finance) concerning grants-in-aid awarded between 2008 and 2015 in the framework of the last two national research plans. As with doctoral dissertations, we performed a similar search by subject descriptors followed by content analysis in order to refine the final sample.

Scientific papers

The *impact factor* for journals is the bibliometric index most commonly used to evaluate and compare scientific output across countries (Buela-Casal, 2013, 23). For the purposes of our analysis in this regard, we limited

our search to databases that are credited with a high impact among the scientific community in the educational sciences. In order to do this, we followed the criteria set by Spain's National Commission for Research Evaluation (CNEAI) in order to grant recognition for six-year periods of research accomplishment, whereby WOS and Scopus qualify as high-impact databases. The depth and breadth of these databases, as well as their international character, made it possible for us to conduct a more thorough and focalized search than in the previous areas, so that we exclusively targeted at *Heritage Education* as Subject Descriptor, Subject Group and Line of research.

Results

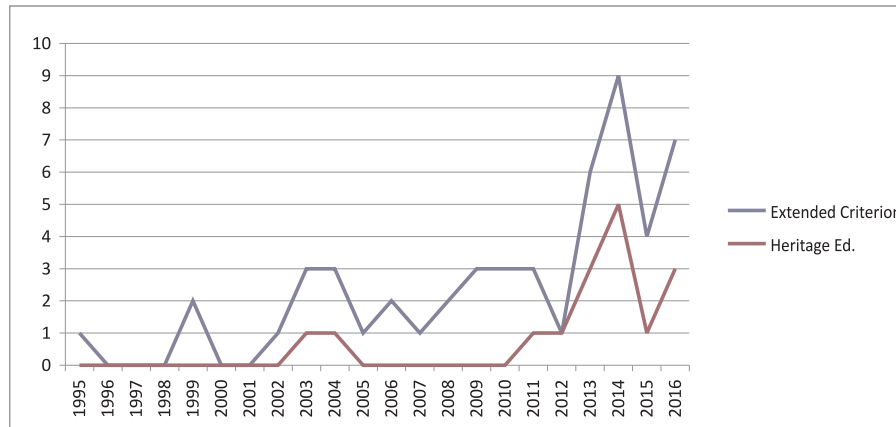
The following presentation of results will be divided into three sections—respectively for each one of the areas of scientific research under scrutiny—succeeded by a triangulation of all three types of observations.

Doctoral dissertations

Our search generated a sample of 52 doctoral dissertations comprising from the earliest item on Education and Heritage back in 1995 to dissertations resulting from the termination of the old PhD programmes in 2016 (See Chart I).

The analysis of this output from the point of view of the four lines of research defined above (*Heritage Education*, *Heritage Didactics*, *Heritage, the curriculum and teachers*, and the more comprehensive *Education and Heritage*) shows that, in terms of absolute figures, there is some balance across them. The first two research lines, respectively represented by 17 and 14 dissertations, reflect explicit criteria regarding the authors' own stance toward both concepts (Ibañez-Etxebarria, 2006); as for the remaining two, one corresponds to a more generic segment, including 12 dissertations that do not fit into other fields, while the other is a more specific line of inquiry responsible for 9 studies on curriculum-centred subjects or dealing with the topic of teacher training (See Table III).

CHART I. Chronological evolution of PhD Dissertation production in Spain (1995-2016) on the subjects Education and Heritage (inclusive criterion) and Heritage Education (restrictive criterion).



Source: own elaboration

TABLE III. Distribution of PhD Dissertation production in Spain (1995-2016) by lines of research.

Line of research	Number of dissertations
Education and Heritage	12
Heritage Didactics	14
Heritage Education	17
Heritage, the curriculum and teachers	9
Total	52

Source: own elaboration

If we now focus on the descriptor *Heritage Education*, we see that one third of our sample (18 papers) include this concept either in their titles or in their abstracts. Interestingly, the first explicit reference goes back to 1999, although it barely consists in the use of the term *Heritage Education* in the abstract of a paper that rather deals with curricular design, which is why we eventually excluded it from this dataset. The

remaining 17 papers strictly qualified as research work on heritage Education. Among them, 12 included the term in their titles while some other 2 used broader yet equivalent phrases like “Education and Heritage-Related communication” or “Artistic and Heritage-Related education”. In the remaining 3 items, the term appeared in the paper’s abstract. By tracing the genealogy of this doctoral output, we learn that the research line *Heritage Didactics* encompasses 14 dissertations, 10 of which were written at the University of Barcelona under the supervision of J.Santacana and X. Hernández, to which one must add the former’s own doctoral research. The research line *Heritage Education*, on the other hand, includes 16 records and shows a more evenly distributed picture, although its genealogy features more interrelations and one focal point in Valladolid (with 7 dissertations supervised by O. Fontal plus her own doctoral research on the subject). Other relevant hubs would be Huelva and the Basque Country (See Image I). Finally, the line of research named *Curriculum and teacher training* features 9 theses, Huelva and Oviedo (under the respective supervision of J. Estepa and R. Calaf) being the most outstanding locations. Otherwise, as was to be expected with such a generic line of inquiry, there are no focal hubs and the same research topics appear recurrently.

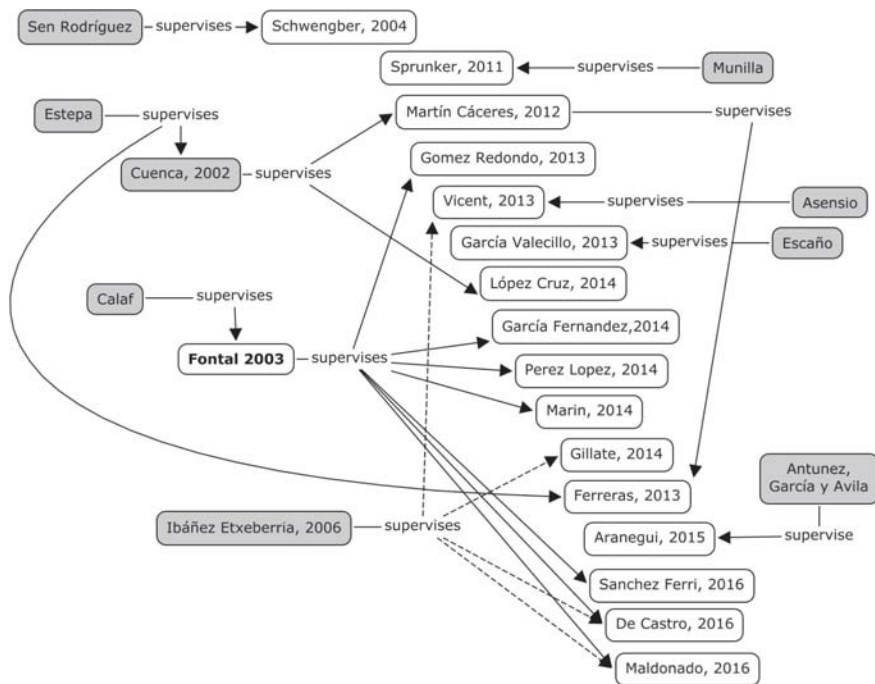
Competitive research projects

In order to analyse scientific production resulting from R&D&I competitive projects receiving national grants-in-aid, we scanned the data for Spain last two research plans. Thus, descriptor follow-up of the *National R&D&I Plan(2008-2011)*⁴ reveals that there were 5 projects directly related to heritage and education. On the other hand, the *State-funded Scientific and Technical Innovation Plan, 2013-2016*, supported 5 projects that were directly related to heritage education over a period of 3 years. If we focus on the timeline of these developments, we will see that 2011 and 2015 were the years with the highest number of projects being developed on this topic, respectively 6 and 4. And if we break down the whole set of projects according to lines of research (See Table IV), we realise that the more generic L1 included 6 projects by

⁴ It spans over a 5 year period because it was extended until 2012.

contrast with 5 projects fitting into L3 (Heritage Education), 4 in L2 (Heritage Didactics) and 1 project falling into category L4 (Heritage and the curriculum). Regarding the occurrence of the specific descriptor *heritage education* in the projects'0 titles, we find 6 projects meeting this requirement, 3 of which were implemented successively at the University of Valladolid (2009, 2012 y 2015), while 2 were developed at the University of Huelva (2008 and 2015) and one was affiliated with the University of the Basque Country (2015).

IMAGE I. Genealogy of Doctoral Thesis defended in Spain (1995-2016) within the descriptor Heritage Education. (Dated contributions fall under the descriptor Education and Heritage).



Source: own elaboration

TABLE IV. List of research projects by year and line of research.

		L1	L2	L3	L4	TOTAL
National R&D&I Plan (2008-2011)	2008	0	1	0	1	2
	2009	0	0	1	0	1
	2010	0	0	0	0	0
	2011	4	2	0	0	6
	2012	0	1	1	0	2
State-funded Scientific and Technical Innovation Plan, 2013-2016	2013	1	0	0	0	1
	2014	0	0	0	0	0
	2015	1	0	3	0	4
	TOTAL	6	4	5	1	16

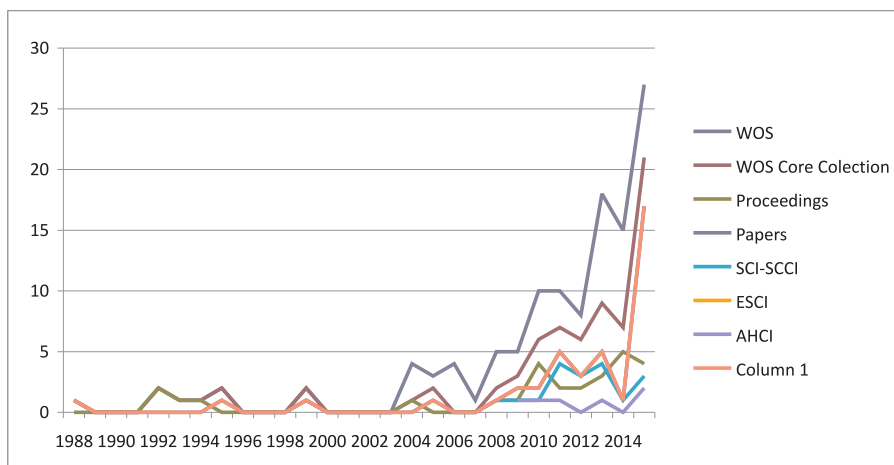
Source: own elaboration

Scientific papers

Finally, as far as scientific papers are concerned, we limited the scope of our analysis to the descriptor and line of research employed in international standard terminology —i.e., *Heritage Education*. We consequently searched what are currently the main two international databases, Web of Science (WOS) and Scopus so as to contextualise Spain’s output in this field against the backdrop of global research.

As regards WOS, our search for the descriptors “Educación Patrimonial”, “Educação Patrimonial” and “Heritage Education” indexed within the *All Databases* category produced 123 records spanning from 1988 –when the first citation is dated— down to 2016. Out of those 123 publications, only 9 (7%) predate 2004, while 77 are included in the WOS Core Collection, by contrast with some other 26 that are part of Latin America’s digital database SciELO.

CHART III. Chronological evolution of scientific paper production on the subject Heritage Education as reflected in the WOS database (1988-2015).



Source: own elaboration

If we now focus on the core collection, from among the 77 identified records, 44 correspond to papers published in scientific journals, to which we must add some other 3 records including reviews and editorials likewise published in journals but not qualifying as papers proper. The remaining records include 28 proceedings and 2 book chapters. A review of papers on an individual basis allows us to refine our database so as to include 43 items.

More specifically about the papers themselves, it can be observed that during the earliest phase scholarly publishing on Heritage Education is completely occasional, with three references in 1988, 1995 and 1999. Starting in 2004, there begins a second phase involving a steady academic output up to 2010, with an average of between 0 and 2 published papers every year. It is in 2011 when scientific production eventually takes off with 5 papers —twice as many as the previous yearly output—, even though this trend had two exceptions: 2014 only saw one paper published, while in 2015 there were as many as 16 —the result, as we shall discuss next, of including new database ESCI within the WOS repository.

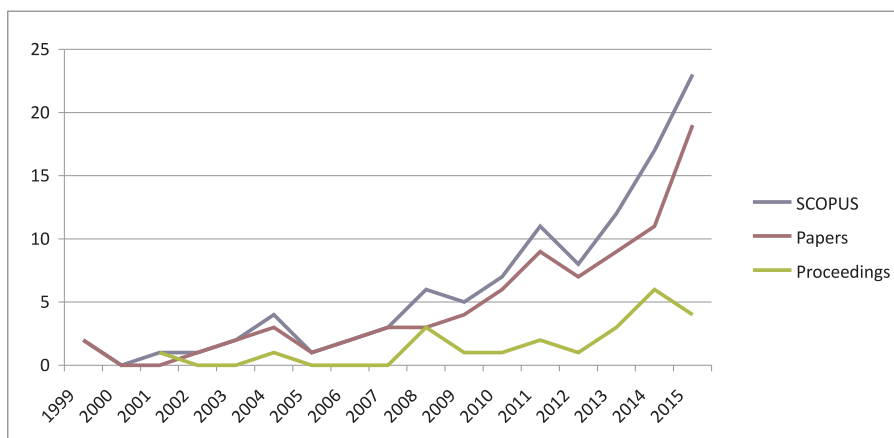
Within the WOS databases, the main world referents are SCI and SSCI, since these include journals accumulating JCR impact factors. However, for the purposes of our study the AHCI is equally important, since, while not providing such a factor, the journals included in this citation index are considered to have a high impact in the Humanities and the Social Sciences. All three sub-databases supply a steady output overtime, with 32 items corresponding in distribution terms with the three main phases described above. A specific case is the latest incorporation of WOS to its main collection, ESCI: a new database without an impact factor which includes emerging journals that are being evaluated with a view to their inclusion in the three major databases. Incorporating for the first time ESCI within the scope of our search for 2015 has had a multiplying effect in heritage education output collected in WOS, with 12 records including a special monograph on the subject.

If we analyse the 43 papers by area of knowledge, we observe that 20 of them fall into the area Education-Educational Research, to which we should add some other 4 in the area Psychology-Educational Psychology. Among the remaining areas involved, mention must be made of Archaeology (4 papers) and Environmental Sciences & Architecture (3 papers). Other areas are only anecdotically present, with one mention each.

As for Scopus, the total number of references found —once notes, reviews and revisions have been scrubbed from the database— is 112 papers published between 1999 and 2016, of which 24 are proceedings and the remaining 88 are papers published in scientific journals⁵. These findings show a sustained development overtime: during an early phase in the late 20th century we see occasional publications followed by a productivity peak in 2004, with 3 published papers that year; it was not until 2008 when such an output multiplied by two, thus kickstarting a second phase extending into 2013 with 6-9 papers being published every year. Since 2014 onwards, records exceed 10 papers a year against a backdrop of geometric progression, with 19 papers published in 2015 and 6 during the first four months of 2016.

⁵ 8 of them were reported as revisions, but are indeed papers.

CHART IV. Chronological evolution of scientific paper production on the subject *Heritage Education* as reflected in the Scopus database (1999-2015).

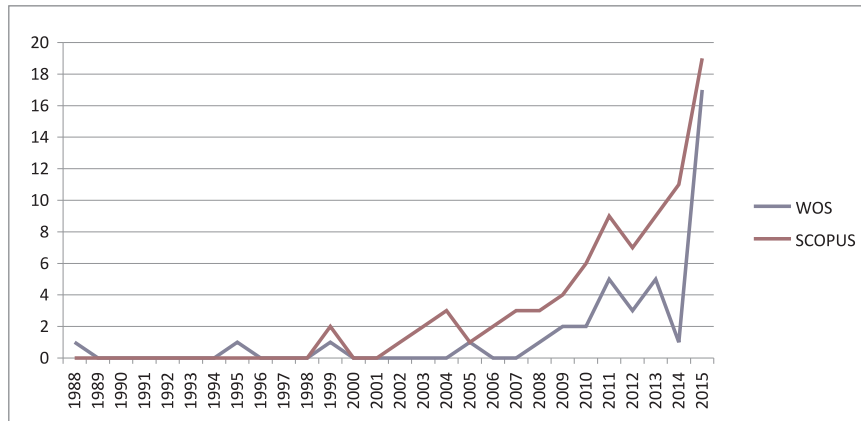


Source: own elaboration

Despite the specific characteristics of each database, including the WOS sub-databases, we may observe that the evolution remains similar in all cases and steady overtime, while the global development reflects worldwide patterns.

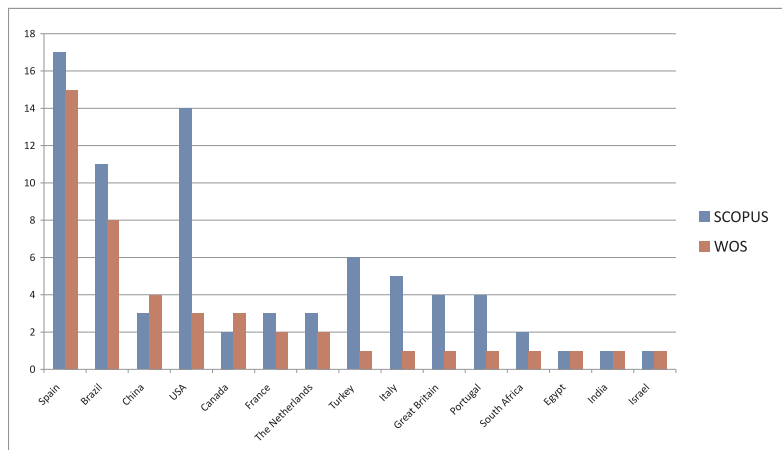
If we focus on the authors' distribution by country, we will see that in both databases we find the same pattern, the exception being the large slot taken by US papers in Scopus, where America ranks second country by number of published papers, while in the WOS database it only ranks fourth with 25% of records. In both cases, the ranking is topped by Spain, respectively with 17 and 15 papers, followed by Brazil with 11 and 8 in absolute figures. As far as Scopus is concerned (and aside of Spain's overrepresentation by comparison with US figures), countries like Turkey, Italy, Great Britain and Portugal —and to a lesser extent China, France, the Netherlands and Greece— are well positioned within the second group of academic publishing countries, whereas in the WOS database that slice is taken up by China, the US and Canada —and to a lesser degree by France and the Netherlands.

CHART V. Comparative chronological evolution of scientific paper production on the subject Heritage Education as reflected in databases WOS and Scopus (1988-2016)



Source: own elaboration

CHART VI. Cross-country comparative evolution of scientific paper production on the subject Heritage Education in databases WOS (main collection) and Scopus (1988-2016)⁶.



Source: own elaboration

⁶ Note: Only countries represented in both databases appear in this graph.

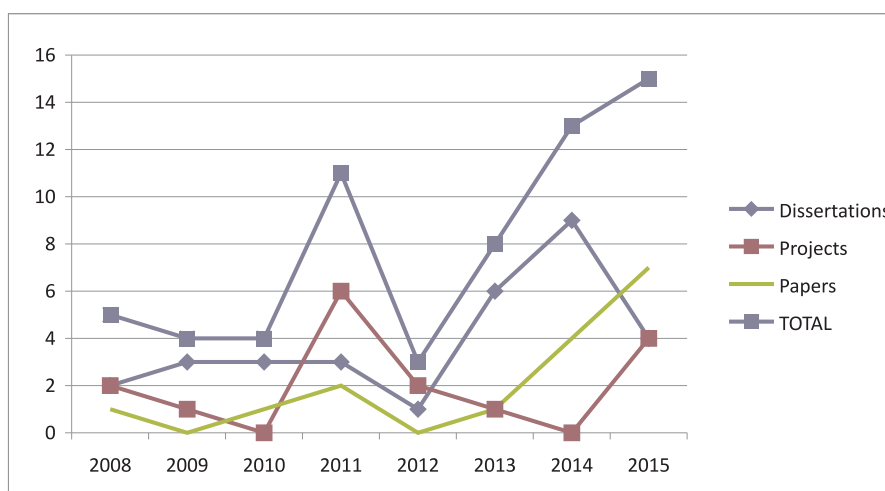
If we now focus on the affiliation of the Spanish production, we can observe that it is highly concentrated around two main hubs. Thus, of the 17 papers having a Spanish affiliation, 15 were produced in Spain itself, while 2 are occasional contributions appearing in as many publications, one Brazilian and the other one Portuguese. As for the 15 papers published in Spain, 7 come from the University of Huelva (Cuenca & Lopez-Cruz, 2014; Estepa, Ávila & Ferreras, 2008; Estepa, Ferreras, Lopez-Cruz & Morón, 2011; Jiménez, Cuenca & Ferreras, 2010; Ferreras & Jiménez, 2013 and Martín-Cáceres & Cuenca 2011, 2016), while some other 5 were produced at the University of Valladolid (Fontal, 2016a, 2016b; Fontal & Gómez-Redondo, 2016; Fontal & Juanola, 2015 and Gómez-Redondo, 2014). Additionally, some of latter scholars also took part in a collaborative work led by the Basque Country, so that all in all both production hubs are responsible for 13 from a total of 15 published items. The remaining 2 were produced at the University of Valencia (Huerta & Hernández, 2015 and Mengual, Payá & Roig, 2015).

As for the 15 papers included in WOS, Huelva is again leader with 7 papers by the same authors (those mentioned above plus Martín-Cáceres & Cuenca, 2015), followed by Valladolid with 4 papers by Fontal (those mentioned above plus Fontal & Ibañez-Etxeberria, 2015). The remaining 4 papers were produced by the Basque Country, Zaragoza and Barcelona (Vicent, Rivero & Feliu, 2015), Valencia, the Autonomous University of Madrid (Asensio, 2015) and Murcia (Pinto & Molina, 2015).

Global scientific production

In order to conduct a global study on scientific production, we will focus on the period 2008-2015, which coincides with the implementation of the national plans that were our object of study and where the bulk of this scholarly output is indeed concentrated. If we attend to the three types of scientific production under scrutiny, the overall evolution for this period is certainly remarkable, since it moves from 5 items in 2008, to 15 in 2015.

CHART VII. Evolution of scientific production by types of output



Source: own elaboration

It is worth noting, with regard to doctoral dissertations, that in January 2016 5 such theses were defended which had been deposited in 2015, so that the projection is for this tendency to continue rising, with 7 dissertations defended during the first fourth months of 2016 alone.

Discussion and conclusions

Clearly, then, there is a tendency for heritage education research to grow in the light of the last 8 years' exponential increase in the volume of global scientific production. Particularly the rise in the number of R&D&I projects and doctoral dissertations specifically related to the descriptor heritage education leads us to expect a significant expansion of scientific production over the next decade: all the more so if we pay attention to the research profiles that are being encouraged by several teacher evaluation bodies (Cuenca & Estepa, 2013).

Regarding subject trends, there is a distinct tendency to produce research work focused on the very concept of heritage education: a pattern reflected in published papers, competitive research projects and doctoral dissertations.

Finally, as far as the genesis of such research work is concerned, it seems clear that the funding of R&D&I projects (in turn the prelude to the production of dissertations and papers) is fulfilling its purpose. The pattern here is distinctly cyclic, meaning that the projects' early steps overlap with the defence of doctoral dissertations and the publication of papers resulting from the previous project, as is illustrated by the cases of Huelva, Barcelona and Valladolid.

Heritage Education research genealogies

If we bear in mind the content of research in terms of subject groups and lines, as well as the concept of heritage education that underpins such research work and the latter's goals and methodological approaches, we may posit as many as four generalologies of inquiry.

(Re)Conceptualising research genealogy

This is an approach which, on the basis of the previous models in all three types of scientific production, gradually incorporates revisions, conceptualisations and even a tendency towards interdisciplinarity and a conceptual revision of heritage education's epistemology (it roughly corresponds with SG3 and SG6 as well as with L3). Thus, in Fontal (2003a) we come across such a reconceptualisation of heritage, the definition of a disciplinary genealogy for heritage education and the setting up of a procedural sequence concerning awareness-raising processes involved in heritagisation phenomena leading to the modelling of heritage education. Ibañez-Etxeberria (2006), on the other hand, further probes into this idea and also discusses the relative positions of Heritage Didactics and Heritage Education. The contribution of Gómez-Redondo (2013) lies in extending heritagisation into identity-construction phenomena. This is a conceptual framework that been mainly shaped

under the umbrella of research projects EDU2009-096797⁷, EDU2012-37212⁸, EDU2015-65716-C2-1-R⁹ and EDU2015-65716-C2-2-R¹⁰. It is connected to the premises of the sociological imaginary as drawn from a number of links with the Sorbonne's line of research (Falcón, Fontal & Torregrosa, 2015).

Marín-Cepeda (2014) outlines a heritage education model based on diversity and even argues for the possibility that heritage education could rest on the principles of universal design, a suggestion further materialised in the HEM-INMO model (Fontal & Marín, 2016). De Castro (2016) advocates an activism resulting from project-based work and specifically defines informal learning in formal settings; Maldonado (2016) approaches the extension of Heritage Education into the interconnected, frontierless digital world of social networks, and Sánchez-Ferri (2016) incorporates the concept “bond-building”, which stems from research output on a heritage education model focused on the creation of community ties around heritage.

Genealogy of didactic-contextual research

This area of inquiry focuses on the didactics of heritage, didactic museography and interpretation processes, and heritage communication and dissemination as major epistemological axes. Research outputs are transfer-oriented and closely linked to localised contexts (they correspond to SG5 and SG6, and with L2). In this model we may trace an evolution in the use of the concept “heritage didactics” with a shift towards the notion of heritage education —a shift that is even reflected in R&D&I projects led by teams mainly affiliated with the University of Barcelona (EDU2008-00427¹¹, EDU2011-28684¹² and EDU2012-35299¹³). Noteworthy

⁽⁷⁾ Observatorio de Educación Patrimonial en España. Análisis integral del estado de la educación patrimonial en España.

⁽⁸⁾ See note 2.

⁽⁹⁾ Evaluación de los aprendizajes en programas de educación patrimonial centrados en los procesos de sensibilización, valorización y socialización del patrimonio cultural.

⁽¹⁰⁾ Evaluación de programas y evaluación de aprendizajes en los ámbitos no formal e informal de la educación patrimonial.

⁽¹¹⁾ Museografía didáctica e interpretación de espacios arqueológicos.

⁽¹²⁾ Musicalización didáctica de espacios patrimoniales a partir de aplicaciones reactivas con contenidos multiplataforma...

⁽¹³⁾ Desarrollo de estrategias y técnicas didácticas a partir del patrimonio y la arqueología del conflicto ...

in this regard is the close involvement with museum settings and heritage spaces, as well as the extensive development of the concepts heritage didactics and didactic museography featuring in numerous publications in journals like *Iber*, *Her&Mus* or in monographs published by Trea, with a special series on the subject. This line of inquiry has produced a large number of doctoral dissertations (Santacana, 1995; Sospedra, 2005; Almazán, 2008; Llonch, 2010; Coma, 2011; Selma, 2014; Grevtsova, 2016) that in turn have spawn further doctoral research supervised by their authors, thus providing continuity for this field of study.

Genealogy of evaluative research

Research work engaged in this approach focuses on the evaluation of educational programmes conducted in museums and heritage spaces from both a quantitative perspective —where Asensio leads the way with several publications (Asensio & Asenjo, 2011; Asensio & Pol, 2002)— and a qualitative one, including relevant projects like SEJ2006-15352/EDUC¹⁴, EDU2011-27835¹⁵ or the above-mentioned EDU2012-37212, EDU2015-65716-C2-1-R and EDU2015-56716-C2-2-R¹⁶). The latter have generated doctoral dissertations and international impact papers (Calaf, Gillate & Gutierrez, 2015; Suárez, Calaf & San Fabián, 2014). Indeed this chapter includes a remarkable PhD research output (Martín Cáceres, 2012; Pérez-López, 2014; Vicent, 2013; Gillate, 2015). On the whole, this area of study has produced a solid methodological output in the field of heritage education, where there was a lack of consistent research work around educational processes and results, including a number of highly relevant contributions (Cuenca, Martín-Cáceres, Ibañez-Etxeberria & Fontal, 2014; Ibañez-Etxeberria, Gillate & Madariaga, 2015; Ibañez-Etxeberria, Vicent & Asensio, 2012; Ibañez-Etxeberria, Vicent, Asensio, Cuenca, & Fontal, 2014; Gillate, Madariaga & Vicent, 2014; Vicent, Ibañez-Etxeberria & Asensio, 2015)

¹⁴ Lazos de Luz Azul: estándares de calidad en la utilización de la tecnología para el aprendizaje en museos y espacios de presentación del patrimonio

¹⁵ Evaluación cualitativa de programas educativos en museos españoles.

¹⁶ Evaluación de programas y evaluación de aprendizajes en los ámbitos no formal e informal de la educación patrimonial.

Emerging lines of research in heritage education

Bearing in mind the lines of research that have been pursued thus far and their several genealogies, as well as their respective outputs and research interests against the backdrop of the major lines of inquiry described in the research programme on heritage education included in the National Education and Heritage Plan (Domingo, Fontal & Ballesteros, 2013, p.14 & ff.), we may discern two major research axes, one including already consolidated proposals —illustrated by the evidence found for the several types of scientific output— and another one currently emerging with proposals that either still await to be tackled or have not been fully developed and require additional and deeper treatment. In this way, one of the most *consolidated* research lines (which in turned has helped shape this area of study as an academic discipline) revolves around the epistemology and modelling of heritage education. Equally settled are lines of inquiry related to the observation, analysis and evaluation of heritage education; the integration of Information and Communication Technologies (ICTs) into the new teaching-learning models; the innovation in resources and tools for the interpretation of heritage; the analysis of the treatment given to heritage by educational legislation as well as the evaluation of the degree of compliance with regulations by both implemented programmes/actions and teaching materials and resources employed in such initiatives.

On the other hand, and to judge by the appearance of doctoral dissertations and R&D&I projects on a number of newer topics, there are several lines of research that, while not yet fully consolidated, may qualify as *emerging*: those related to the evaluation of impacts caused by the media, the social networks and other virtual communication channels on heritage education in society; the emerging educational models and innovative didactic designs and applications in tune with texts issued by UNESCO and the European Union; the integration of Information and Communication Technologies (ICTs) into the new teaching-learning models where technology is used as a management tool (and not as a medium) by resorting to processes of simulation, alteration or production (virtual learning environments, augmented reality, geolocation, etc.); and, finally, the study of specific evaluation models targeted at measuring programmes, processes and learning outcomes around heritage education. All of which, with proper support from regulations, national

heritage plans and national research plans, will shape the direction of research work on heritage education over the next decade.

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