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Spanish Journals of Education & Educational Research in the JCR: A bibliometric analysis of the citations

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Abstract:
This paper analyses the citation patterns of the Education & Educational research Spanish journals within the *Journal Citation Report* (JCR). The analysis is based on four indicators: the references' type percentage, the mean reference per documents, the mean reference age and the journals' citation frequency. The results show that the mean reference age is higher than eleven years. Moreover, the citation to journals represent less than the half of the total amount of references.

Keywords:
Bibliometrics, Citation patterns, Spanish journals; Education research.

Introduction

It is widely known that the citations of a scientific publication are a main aspect to assess its relevance. The citation analysis is defined as the quantification of bibliographic information for use in analysis (Pritchard, 1969). In the Information Science field, the citations are a good source so as to identify the most cited journals and authors within a given scientific discipline. In a scientific research work, they also establish the theoretical framework of the research work, showing the current state of the art. Inside a given scientific research field, the citation analysis reveals which are the most influencing articles, journals and authors through several indicators such as the citation frequency and co-citation centrality.

Thus, all the information extracted from the citations lets us study a wide range of questions and bibliometric problems. Nevertheless, we shouldn't forget that, as Woulters (1999) states, the articles' references are produced by the science itself whereas the citations are by the measurement techniques of the Bibliometry.

On the other hand, due to the fact that scientific journals are the main way for spreading research results, these have been targeted in many analyses. In some cases, the scientific production of a specific field or research topic is analysed through a set of journals (Mahapatra, 1994; Yang & Lee, 2012), in others, it is compared the scientific production of several countries (Gupta & Mahesh, 2013). Other works are focus on the study of a group of journals published within a country or geographical region (Agudelo, Bretón-López, & Buela-Casal, 2003; González-Alcaide, 2010; Haddow & Genoni, 2009), or specific journals of a research field (Barik & Jena, 2013; Jiménez-Fanjul, Maz-Machado, & Bracho-López, 2013; Roy & Basak, 2013). In some other researches, the journals are analysed basing in authors' gender (Håkanson, 2005) as well as the impact factor (Togia & Tsigilis, 2006).

In several of the aforementioned studies, the citation has been analysed because the citation frequency is being established as an indicator to assess the relevance and success of authors, research groups or institutions (Bornmann, Mutz, Neuhaus, & Daniel, 2008; Haddow & Genoni, 2010). Therefore, researchers have studied how the auto-citation affects the impact factor of a journal (Campanario, 2010; Campanario & Candelario, 2010; Rattan, 2013).

The citation analysis entails several difficulties all due to the way the databases process the reference information of the articles for creating the metadata. They only copy the reference information as it appears in the article, as the author wrote. This implies, as identified by several authors, some problems such as: variants in the name of a journal, errors in authors' name or multiple authors with the same name (homonyms) (Borgman & Siegfriled, 1992; Moed, 2005). Often, the errors in the authors' names are caused by typographical variation while transliterating from one alphabet to another (Moed, 2005). Another source of errors is that when the data are been incorporated to a data base index, such as the SSCI, some information is missed or miswritten: volume numbers,

number pages, or different abbreviated notations for the same journal (Glänzel & Schoepflin, 1999), even more when the cited journal is not indexed in the data base.

Due to the fact that in the last decade the *Social Sciences Citation Index (*SSCI) has been incorporating new journals from non-English countries, it is appropriate to study the behaviour of the specific journals for a scientific field analysing their references' patterns. Therefore we select all the Spanish journals indexed in the *Journal Citation Report* (JCR) within the subject category *Education & Educational Research.*

Objectives

The main purposes of the study are to:

- Find out the rate of citations per article in Spanish Journals inside the category of *Education & Educational Research* indexed in the JCR.
- Determine the average references age in these journals.
- Reveal the types of cited documents.
- Determine the most cited journal.

Materials and Methods

Firstly, the Spanish journals indexed in the JCR inside the *Education & Educational Research* category were identified, finding only 10 journal tittles: *Revista de Educación*, *Comunicar*, *Infancia y Aprendizaje*, *Revista Española de Pedagogía*, *Cultura y Educación*, *Enseñanza de las Ciencias*, *Porta Linguarum*, *ESE Estudios Sobre Educación*, *Revista de Psicodidáctica*, *Educación XXI*. Secondly, the metadata of all the documents published in any of these ten beforesaid journals were downloaded from the database *Social Science Citatión Index* (SSCI), accessed through the *Web of Science* (WoS). 2536 documents ranging from article, book review, editorial material, review, biographical item, proceedings paper to correction were obtained. The database was accessed on August 2013. We decided to reduce the sample by focusing on the articles and reviews only: 1772 documents. Henceforth we refer to any of both documents as documents.

For the analysis we used Bibexcel, a versatile bibliometric toolbox developed by Olle Persson (Persson, Danell and Sneider 2009). For the analysis, all references were listed

and grouped by document type (categories): journals, books, conference proceedings, report, unpublished dissertations/theses, government documents, and newspaper.

In order to assign a category to each reference, we took into account the structured given to each one by the SSCI. For instance, the references for journal articles are written in the SSCI as: First Author Last name and First name's letter, year, journal's abbreviated tittle, volume, first page, DOI (e.g. CARPENTER TP, 1981, J RES MATH EDUC, V12, P27, DOI 10.2307/748656). A book reference would follow the following pattern, as shown in the next example: SCHOENFELD AH, 1985, MATH PROBLEM SOLVING. That way we can distinguish between books and articles by seeking for volume number and first page. If we find them, the reference is an article, otherwise is a book. These last references were treated in two ways, manually and based on computer procedures for determine the type of reference: books, conference proceedings, report, dissertations/theses, and government documents.

The age of the references was determined as the difference between the publication year of the reference and the citing article. When the publication year is not presented in a reference is, for being an in-press article or not published document, for instance, we assigned the same publication year as the citing article.

Results and discussion

These ten journals contained 1772 documents (articles and reviews). The *Revista de Educación* journal has the highest number of documents published between 2005 and 2012 (Table 1). The four most prolific journals represents the 56,94% of all the Spanish production de within the *Education & Educational Research* category of the SSCI. As we can see, the journals in the sample have an average ranging from 16,6 up to 66 documents published per year.

Table 1. Documents per journal

Journal	IF 2012	First indexed by SSCI in	Documents	% of 1772	Documents per year
Revista de Educación	0,309	2008	330	18.623	66,0
Comunicar	0,350	2007	255	14.391	42,5

Infancia y Aprendizaje	0,603	2006	224	12.641	32,0
Revista Española de Pedagogía	0,353	2005	200	11.287	25,0
Cultura y Educación	0,224	2008	162	9.142	32,2
Enseñanza de las Ciencias	0,238	2008	161	9.086	32,2
Porta Linguarum	0,280	2008	126	7.110	25,2
ESE Estudios Sobre Educación	0,133	2007	117	6.603	19,5
Revista de Psicodidáctica	1,514	2007	99	5.587	16,5
Educación XX1	0.023	2007	98	5.530	16,6
Total			**1772**	**100.00**	

At the very beginnings, the overall production was anedotic but latter on this was increased due to the SSCI covered new journals. Thus, the increase rate is 1475% in only eight years, passing from 24 documents in 2005 to 354 in 2012 (Table 2). The last three years cover more than the 57% of the overall production in the period. The journal with the highest *Impact Factor* (IF) of the set publishes only a quarter of the production cover by the most prolific journal. Needless to say, a lower number of documents published per year is not a guarantee for having a higher IF, what can be shown by comparing the journals *Revista de Psicodidáctica and Educación XXI.*

Table 2. Documents per year, between 2005 and 2012

Publication Years	Documents	% of 1772	Cumulative percentage (%)
2005	24	1,35	1,35
2006	49	2,77	4,12
2007	147	8,30	12,41
2008	248	14,00	26,41
2009	289	16,31	42,72
2010	307	17,33	60,04
2011	354	19,98	80,02
2012	354	19,98	100,00
Total	**1772**	**100,00**	

The 1772 generate a total amount of 53818 references, corresponding the 52,54% of the total to books and the 45,00% to journal articles. The citations to other types of documents, apart from books and journals articles, are insignificant (Table 3). However, it is remarkable that citations to dissertations/theses are almost the triple of citations to conference, even more taking into account that the access to the dissertations data is more restrictive than to the proceedings. The mean number of references per document (30,37) is more close to the values observed by Glänzel and Schoepflin (1999) for

Psychology and psychiatry (31,0) and Sociology (32,7).

Table 3. Type of cited documents

Type of cited documents	Total of citations	Percentage from total citation (%)	Cumulative percentage of citations (%)
Books	28275	52,54	52,54
Journals	24220	45,00	97,54
Unpublished dissertations/theses	762	1,42	98,96
Conference proceedings	277	0,51	99,47
Government documents	134	0,25	99,72
Reports	131	0,24	99,97
Newspapers	19	0,04	100,00
Total	**53818**	**100,00**	

Analysing the average age of the references, it is observed that documents with an average age between 6 and 10 years are the 28,62% of the total production. These are follow by documents between 11 and 20 years (27,52%). Moreover, only the 30% of the references has an age equal or less than 5 years. The citing to recent documents, i.e. those published in same year than the citing article, is almost inexistent, being less than 1% (Table 4). It is shown the existence of references very old (more than 50 years), what is characteristic of the historical studies about Education (old textbooks, history of educational institutions, etc.).

Table 4. References' distribution per age in Spanish education journals. 2005–2012.

Reference age (Years)	References	Percentage from total citation (%)	Cumulative percentage of citations (%)
0	380	0,71	0,71
1	1918	3,56	4,27
2	3339	6,20	10,48
3	3529	6,56	17,04
4	3537	6,57	23,61
5	3536	6,57	30,18
6 a 10	15402	28,62	58,80
11 a 20	14813	27,52	86,32
20 a 50	6935	12,89	99,21
50+	429	0,80	100,00
Total	**53818**	**100,00**	

In the table 5 we can see that the average age of the references at the beginning of the

period (2005) was 9,76 year and this has been increasing up to 12,54 years for 2012. In the whole, the average age of the references of the articles published by the Spanish educational journals covered by the JRC is 11,75 years, a value similar to those found for other scientific fields, such as Mathematics (11,3) and Psychology and psychiatry (11,4) (Glanzel & Schoepflin, 1999).

Table 5. Annual distribution of the average reference age for the Spanish journal of Education

Year	Mean reference age
2005	9,76
2006	12,87
2007	12,02
2008	11,92
2009	11,65
2010	11,73
2011	11,51
2012	12,54

The articles in the sample cite to an amount of 4943 different journals. Only 203 of these cited journals are published in Spain and are the source for 4738 cites, i.e. the 19,56% of the total of references.

Table 6. Rank of the twelve journals most cited

Rank	**Journal**	**Total of citations**	**Percentage of citations of journal**
1	*Enseñanza de las Ciencias**	533	2,201
2	*Child Development*	408	1,685
3	*Infancia y Aprendizaje**	408	1,685
4	*Revista de Educación**	396	1,635
5	*Journal of Educational Psychology*	351	1,449
6	*Psicothema**	303	1,251
7	*Revista Española de Pedagogía**	301	1,243
8	*International Journal of Science Education*	280	1,156
9	*Cultura y Educación**	224	0,925
10	*Comunicar**	223	0,921
11	*Teaching and Teacher Education*	205	0,846
12	*Journal of Research* and *Science Teaching*	197	0,813
13	*Developmental Psychology*	185	0,764
14	*Revista de Psicodidáctica**	176	0,727
15	*Science Education*	163	0,673
16	*Review* of *Educational Research*	162	0,669

17	*Revista de Investigación Educativa**	160	0,661
18	*Revista Interuniversitaria**	144	0,595
19	*Learning and Instruction*	133	0,549
20	*British Journal of Educational Psychology*	129	0,533

* Spanish journal.

Between the top-20 journal ranks shown in table 6, are 9 of the 10 Spanish journal analysed. *Enseñanza de las ciencias* is the most cited journal, whereas *Porta Linguarum* is the 64th position with only 55 cites. These 20 journals are the 20, 98% of the total articles' citations.

Conclusions

Despite having increased the number of documents published in the Spanish journals of education from 24 documents in 2005 up to 354 in 2012 –which is an increment of 1475%-, this is only due to the SSCI incorporated new journals, ranging from 1 journal in 2005 (*Revista Española de Pedagogía)* to ten. Likewise, this fact has also implied a decrease in the number of documents published per year and journal, varying from 24 in 2005 and reaching 35 in 2012.

The grey literature, which is a referent in the educational research published in the Spanish journals, comes mainly from books and grey literature (55%). The fact that the average reference age is 11,7 years reveals that there is slowness in transfering the new educational advances and researches.

The results point out the interest in knowing if these citation patterns and the average reference age follow the same patterns than in the educational journals from English-speaking countries or neighboring countries.

The findings would be interesting for librarians in the faculties of education due to the educational journals most cited by Spanish journals can be clearly identified so as to consider incorporate them to their libraries.

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