Research on the productivity of the journal *Review of Educational Research*: A scientometric study

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Abstract

The following study presents a bibliometric analysis of the journal Review of Education Research, which is the journal with major impact in the year 2014 within the category Education & Educational Research of the Journal Citation Report (JCR). The aim of this work was to analyse several aspects related to this journal like authorship patterns or collaboration between the authors or the countries and the institutions producers. For it, they were downloaded from the Web of Science (WoS) all the documents of this journal from 1956 to 2014 and they were transferred to an ad hoc database from which the bibliometric analysis was made.

Keywords

Bibliometry; Journal publications; Degree collaboration; Research on Science education.

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INTRODUCTION

Scientometric research aims to identify different patterns in scientific production by using bibliometric techniques. These techniques are based on the quantitative aspects which are extracted from written documents. From information sciences is recognized that scientific publications reflect the research which is being done at all levels of knowledge either by groups or by research centres. Due to the high growth in the volume of scientific publications, in recent years scientometric research has been focused on the analysis of certain fields of knowledge. Sometimes, it has been studied the production of a country (Kim, 2001) or a geographical region (Ramos, Masía, Padilla & Gutiérrez, 2009), of an institution (Vanathi, Saravanan & Nagarajan, 2015), of a topic or an specific field of knowledge (Michon & Tummers, 2009), of a set of journals (Maz-Machado, Jiménez-Fanjul & Madrid, 2015) or of an specific journal (Erfanmanesh, Rohani & Abrizah, 2012).

The field of education has been analysed from several points of view. For example, it has been studied the Brazilian scientific production in this field taking as units of analysis the doctoral theses and the articles indexed in national and international databases (Coutinho et al., 2012). Campanario, González & Rodríguez (2006) found that for some journals in the fields of Education and Educational Psychology one part of the citations received came from articles written by members of the editorial boards of the own journals.Budd (1988) studied the articles of the journals *Journal of Higher Education*, *Research in Higher Education* and *The Review of Higher Education* and he found that they behave according to the laws of Bradford and Lotka.

Anta (2008) analysed the educational research published in Spanish journals between 1990 and 2002, he found that the average of annual production is 240 articles. On the other hand, when Chang, Chang & Tseng (2010) analysed four representative journals in the field of educational research, they found that English-speaking countries are the ones which have contributed more to the articles about scientific education. An analysis of the journals *International Journal of Science Education*, *Science Education* and *Journal of Research in Science Teaching* from 1998 to 2002 found that the most published articles are classified as empirical studies, while theoretical or review works are rarely presented in these journals (Tsai & Lydia Wen, 2005).

Moreover, these journals, *International Journal of Science Education*, *Science Education*, and the *Journal of Research in Science Teaching,* were analysed from 1998 to 2002 considering the nationality of the author, the type of research and the topic of the research (Lee, Wu & Tsai, 2009). It was found that USA, Australia, United Kingdom and Canada have increased the number of articles and that the topics of research are focused mainly on students' learning.

Fernández-Cano (2011) analysed the Spanish production in educational journals and he found that in them there was a constant participation of authors from the field of computer science due to the use of the Technologies of Information and Communication in education. Haddow & Genoni (2009) analysed Australian educational journals to try to establish evaluation indicators for them in order to balance the quantitative with the qualitative. They concluded that the elaboration of a useful measure of the impact of the journals based only on citation data for these journals was difficult. With this background about the attempts to identify patterns of publication in journals of both education and educational research, we found that from 2000 to 2014 the journal *Review of Educational Research* (Rev Educ Res) was 8 times the one which highest impact on the category of *Education & Educational Research* of JCR and it has always maintained between the 4 of highest impact. This has generated the interest in knowing what the patterns of publication of this journal are.

OBJECTIVES

The aim of this study is to analyse the journal which highest impact in the year 2014 within the category *Education & Educational Research* from JCR, the main focus of attention are the following objectives:

- To study authorship patterns of the published literature.
- To identify the degree of collaboration among the authors.
- To identify the authors and the countries with the largest production of the journal.

METHODOLOGY

Initially, JCR was consulted to detect the journal with the highest impact factor (IF) in the category *Education & Educational Research* for the year 2014. The journal is *Review of Educational Research*, with an IF= 3,897. Then, in August 2015 they were searched in the database of the Web of Science (Wos) all documents published in this journal and indexed in WoS. It was obtained a total number of 1584 documents from 1956 to 2014. These were downloaded and transferred into an *ad hoc* database in order to extract the bibliometric information.

It were obtained 446 documents without the address of the authors, almost all of them were from the period 1959-1969; in the later years 23 were found and they were correction or editorial material. These documents were not considered to account the production by country, so the total number of documents considered for this is 1138. In order to count the number of authors who elaborate each document, a straight count system was chosen, so all signing authors are considered equally. To determine the degree of collaboration (DC), which is the rate of the number of research articles made in collaboration in relation to the total number of research articles published during a given period, it was used the formula proposed by Subramanyam (1983):

So, for a set "K" of documents published in the journal:

$$DC = 1 - \frac{f_1}{N},$$

where $0 \leq DC \leq 1$,
f_1 = = number of documents having 1 author in collection *K*.

N = total number of documents in *K*.

ANALYSIS AND DISCUSSION

From 1956 to 2014, the journal *Review of Educational Research* published 1584 documents. 60,04% are Articles and 34,53% are Reviews, the remaining 5,43% are Editorial material, Proceedings papers, Correction, Notes and a Book review (Table 1).

Table 1. Documents classified by their type.

Type of document	Number of docs	%
Article	951	60,04
Review	547	34,53
Editorial Material	59	3,72
Proceedings Paper	18	1,14
Correction	3	0,19
Note	3	0,19
Correction, Addition	2	0,13
Book Review	1	0,06
Total	**1584**	**100,00**

During the 59 years studied, the average number of documents published per year in the journal is 26,8. However, it shows a large change over the years. During the first 20 years the journal published between 30 and 55 documents per year, but since 1971 the number of published documents ranged between 10 and 30, except in the year 2009 in which there were published more than 40 (Figure 1). This increase in documents in 2009 might have to some extent affected the IF of the journal, because in that year the journal was the first its category, while in the next years, 2010 and 2011, it occupied the places 2nd and 3rd respectively. From 2012 to 2014, the number of published papers decreased and the journal was again number one in IF.

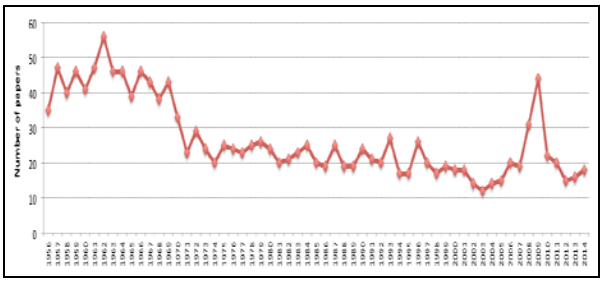

Figure 1. Number of documents per year.

1329 documents published in the journal have received at least one citation. Therefore, only 16.1% of the journal's documents have not ever been cited. The most cited article from the journal is *Self-concept-validation of construct interpretations* written by Shavelson, Hubner & Stanton from Standford University, the article was published in 1976 and it has 1138 citations in WOS.

2214 different authors have published in *Review of Educational Research*, 1927 of them (87.04%) have signed a single document. Moreover, only three of these 2214 authors could be called "major producers" in terms of Bradford: Slavin, Leinhardt and Michael have signed more than 10 papers.

Table 2. Most productive authors in the journal (n≥5)

Author	Number of documents
Slavin, RE	16
Leinhardt, G	15
Michael, WB	11
Kulik, CLC	9
Kulik, JA	9
Abrami, PC	8
Cooper, H	8
Walberg, HJ	8
Grant, CA	6
Graue, E	6
Hattie, J	6
Hedges, LV	6
Hunt, JT	6
Ausubel, DP	5
Bangertdrowns, RL	5
Johnson, DW	5
Johnson, RT	5
Smith, HA	5
Swanson, HL	5

54,55% of the papers are signed by only one author. The degree of collaboration (DC) obtained is DC= 0,45 which reveals not much collaboration in the authorship of documents. In fact, this value is lower than the one obtained for a set of four journals related to mathematics education for the years 1986-2011 (DC=0,61) (Jiménez-Fanjul, Maz-Machado & Bracho, 2013). However, a detailed analysis considering every year shows that this low average value is greatly influenced by the first two decades. In recent years, this value has increased and it has reached values of 0.94 and 0.83 in 2013 and 2014 respectively (Figure 1). This agrees with the results of several researches that have been made in recent years in different fields of sciences and social sciences and which show an increase in the collaboration in the authorship of articles, for example Glänzel and Schubert (2005) or Moed (2005).

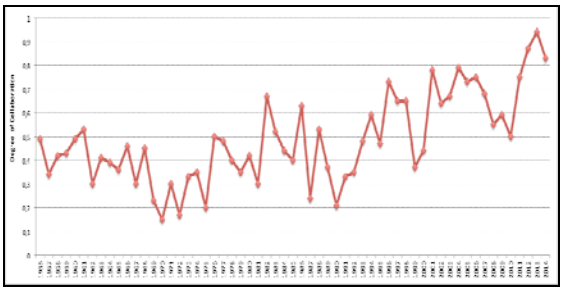

Figure 1. Diachronic evolution of the degree of collaboration.

All the documents obtained are signed by authors from only 14 countries. Furthermore, more than half of the papers come from USA (Table 3), whereas the presence of documents coming from non-English

speaking countries is minimal (4,4% of total documents which included addresses).

Table 3. Documents by country in the journal *Review of Educational Research*.

Country	Number of documents	%
USA	947	83,22
Canada	74	6,5
Australia	30	2,64
Netherlands	25	2,2
England	23	2,02
Germany	8	0,7
New Zealand	8	0,7
Israel	5	0,44
Belgium	4	0,35
Peoples R China	4	0,35
Scotland	3	0,26
Singapore	3	0,26
France	2	0,18
Spain	2	0,18
Total	1138	100,00

The number of references of each paper ranges from zero to 424 and the average number of references per document is 121,9.
The analysis of the descriptors from the documents of the journal *Review of Educational Research* produces 1558 different descriptors. Two descriptors are the most commonly used: Students and Education (Table 4)

Table 4. Descriptors more used in the journal *Review of Educational Research.*

Keyword	Number of times	Keyword	Number of times
Students	73	Model	16
Education	60	Race	16
Achievement	46	Strategies	15
Instruction	40	Impact	14
Knowledge	37	Science	14
Performance	37	Attitudes	13
Children	33	Comprehension	13
Academic-achievement	22	Curriculum	13
Classroom	22	High-school	13
Teachers	22	Acquisition	12
Metaanalysis	20	Learning-disabilities	12
School	20	Perspective	12
Beliefs	18	Program	12
Mathematics	18	Schools	12

In the affiliation of the authors there are 284 different universities. The University of Wisconsin with 23 papers is the most productive, followed by the University of Texas Austin with 18 (Table 5). The first non-American university is the University of Amsterdam with 7 papers. Considering that 83,22% of the papers came from USA, the collaboration between universities occurs almost alone among USA universities, with some exceptions like the one between the University of Leiden (Netherlands) and the Arizona State University (Figure 2) .

Table 5. The most productive universities in the journal

Institution	Number of documents
Univ Wisconsin	23
Univ Texas Austin	18
Univ Illinois	14
Univ N Carolina	11
Concordia Univ	10
Univ Calif	10
Univ Minnesota	10
Rutgers State Univ	9
Univ Chicago	9
Univ Connecticut	9
Univ Pittsburgh	9
Harvard Univ	8
Stanford Univ	8
Syracuse Univ	8
Univ S Florida	8

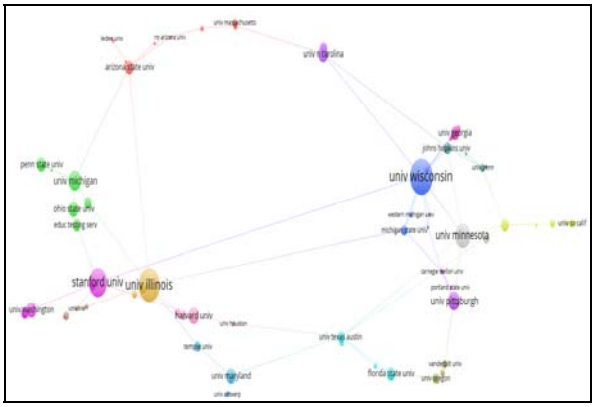

Figure 2. Collaboration network among universities

CONCLUSION

Throughout the previous pages it has been made a bibliometric analysis of several aspects of the journal *Review of Educational Research*. The results show that although articles represent the largest number of papers published in the journal, it is also remarkable the large number of reviews. This large number of reviews may be the reason for the increase in the average number of references per paper.

The documents published in the journal *Review of Educational Research* have a very local origin when it refers to the variable country. However, this journal is a world leader in the field of *Education & Educational Research*, which is evidenced by their continued presence in the first quartile (Q1) of the JCR and the many occasions in which the journal has been the one which the largest IF from that category. The papers published in the journal have guaranteed a high rate of probability for being cited; in fact, 83.9% of them received at least one citation.

The collaboration in the authorship of papers in the journal follows the patterns of increase which is also shown by other fields of knowledge, due probably to the easier access to several ways of communication and scientific collaboration.

To sum up, in the previous pages several aspects of the journal *Review of Educational Research* has been analysed, this has allowed an approach to the publication characteristics of one of the best valued journals in the field *Education & Educational Research.*

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