

# Analyzing the Intellectual Structure of World Information Literacy Literature through Citations and Co-Citations

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**Abstract.** Information literacy is one of the emerging topics for many fields in recent years. This paper aims to evaluate the field of information literacy by using bibliometrics and scientific visualization techniques. To achieve this aim, a total of 1,218 papers related to information literacy on *Web of Science (Science Citation Index, Social Science Citation Index and Arts & Humanities Citation Index)* were identified. Searches were carried out using the term “information literacy” and all data were unified and standardized to be able to make reliable evaluations. Publication and citation counts, their distribution to journals, authors, document types etc. and co-citation networks were used for evaluations. Findings of this study are important to reveal the pioneers and interdisciplinarity of the field of information literacy.

**Keywords:** Information literacy, citation analysis, co-citation analysis, mapping, visualization

## 1 Introduction

The term ‘Information literacy’ (IL), used for the first time by Paul Zurkowski in 1974, is defined as recognizing an information need and having the ability to locate, evaluate, and use it effectively [1]. After it was widely accepted, many countries worked on how to improve information literacy abilities and how to adapt this concept to education. Based on this, not only were models such as SCONUL [2], Big6 [3] and the Kuhlthau Model [4] developed, but also standards like the Information Literacy Competency Standards for Higher Education [5] and ANZIIL [6]. These developments show the incremental awareness about the information literacy over course of time.

Information literacy requires integration between numerous personal abilities such as, critical thinking, problem solving, analysis, synthesis, organizing the knowledge, etc., for using the needed information. Gaining these abilities helps personal development, self-confidence, lifelong learning, and social change as well.

On the other hand, information literacy engages with many different disciplines and topics. In recent years, the number of studies about various facets of information

literacy, e.g. models, standards, education, applications and training platforms and their importance to various disciplines have been increasing remarkably.

This study aims to evaluate the field of information literacy by using bibliometrics and scientific visualization techniques. Questions addressed as the aim of the study are:

- Who are the most prominent authors?
- Which papers are cited most often?
- How many publications are not cited?
- What are the most important journals for the field?
- Which types of papers are preferred by the authors of this field?
- What is the half-life for the field of information literacy?
- What are the most prominent terms used in this field?

## 2 Method

For evaluating the field of information literacy, a total of 1,218 papers from 1980 to 2013 related to information literacy in *Web of Science* (*Science Citation Index*, *Social Science Citation Index* and *Arts & Humanities Citation Index*) were identified. Searches were carried out on April 23, 2013 by using the term “information literacy”. All metadata about authors, journals, keywords etc. were unified and standardized to be able to make reliable evaluations. VosViewer visualization tool were used for co-citation analyses. Publication and citation counts and their distribution to document types, journals, authors; cited half-life and citation counts, author and term co-citation networks are identified.

Unfortunately, it is impossible to add all publications about information literacy to this study because of Web of Science’s content scope. Web of Science indexes only selected journals which restricts the evaluation process. In addition, since articles are the largest content component of Web of Science, the results and discussions here are primarily based on citations in articles.

## 3 Findings

1,218 papers were written by 2,235 authors. Table 1 shows most productive authors. As also seen in Table 1, the most productive author is *Julien, H.* with 21 papers. There are only five authors who published 10 or more papers. This means that there are no primary author(s) in the information literacy field, which makes creating a co-authorship map difficult.

Table 2 shows the list of journals where authors in the information literacy field publish. *Journal of Academic Librarianship*, with 124 papers, is the leading journal in the field followed by *Portal-Libraries and the Academy* and *College & Research Libraries*.

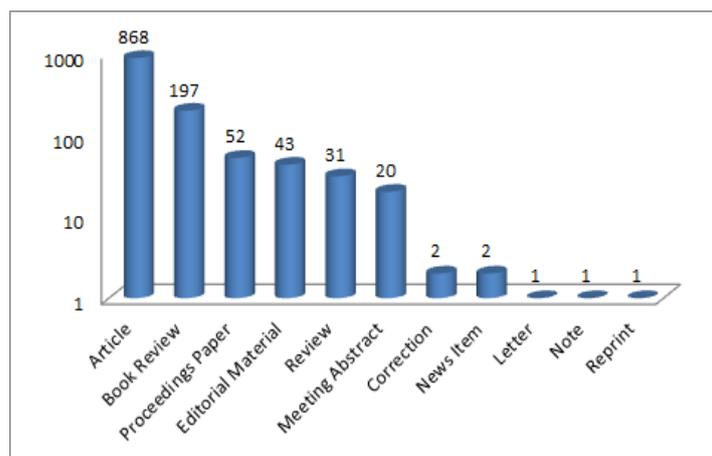
**Table 1.** Most productive authors for the information literacy field

Author	Publication number
Julien, H	21
Pinto, M	16
Bruce, C	15
Lloyd, A	13
Fourie, I	10

**Table 2.** Primary journals in the information literacy field

Journal	Publication number
Journal of Academic Librarianship	124
Portal-Libraries and the Academy	67
College & Research Libraries	64
Electronic Library	42
Reference & User Services Quarterly	42
Journal of Librarianship and Information Science	40
Library Trends	40
Libri	37
Information Research-an International Electronic Journal	35
Journal of Documentation	35

As was expected, articles are the most common document type indexed by *Web of Science* on the topic of information literacy. Other forms of publication are also important to this study. As seen in Figure 1, *book reviews* is the second most common document type found after *articles*. This can be interpreted in two different ways: the rising importance of books in the field, and the increasing number of published books. *Proceedings papers*, *editorial materials*, *reviews* and *meeting abstracts* are other document forms found in this index on IL.



**Fig. 1.** Published document types for the information literacy field

The 1,218 papers were cited 4,727 times, nearly half of which were self-citations (2,104). The citation count changed to 2,623 when self-citations were removed. The other important finding with the citations is that more than half of the papers (648) had been cited yet. Figure 2 shows publication counts with the number of non-cited papers by years. For the first 20 years (1983-2002) almost all published papers have an impact on the field. After 2002, the numbers of publications and non-cited papers rise dramatically. This can be interpreted as a result of the development policy of Web of Science. Although the number of publications in Web of Science rose with the content of regional development policy [8], these publications haven't been cited by other studies evenly.

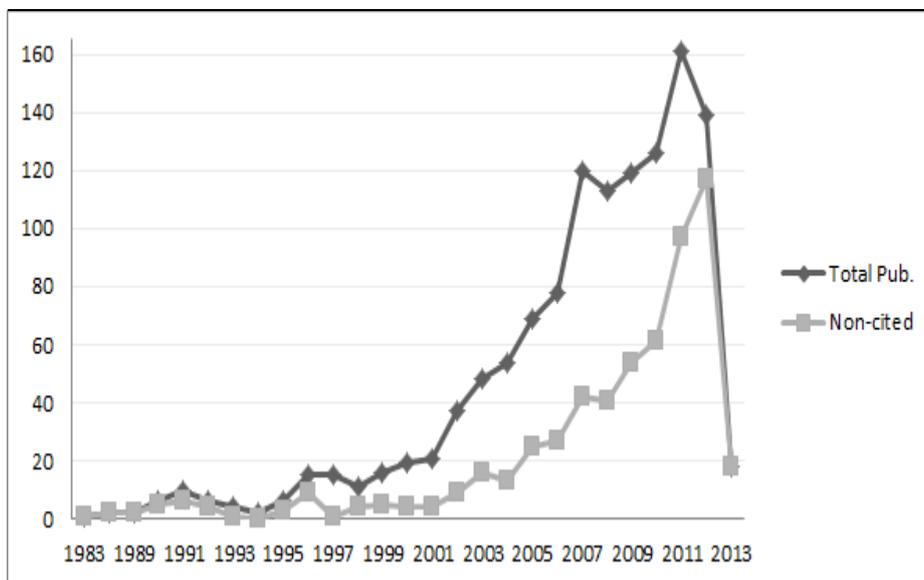


Fig. 2. Publication numbers and not-cited publications by years

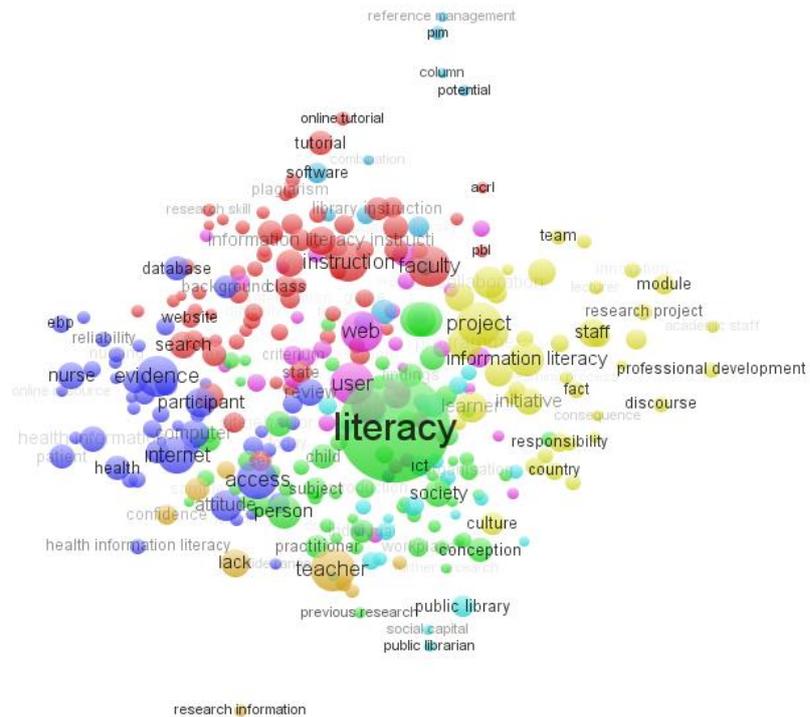
Half-life of publications in the information literacy field is 11 years. In other words, the obsolescence rate for the field is 11 years and a source may be thought as not to be up-to-date after 11 years.

Table 3 shows the most cited publications in the information literacy field. The review entitled "Information and digital literacies: A review of concepts" by *David Bawden*, published in *Journal of Documentation*, appears to be the most cited work in the information literacy literature. The article entitled "Children's relevance criteria and information seeking on electronic resources," by *Sandra G. Hirsh* and published in *Journal of American Society for Information Science*, and the review entitled "The problem of information overload in business organizations: a review of the literature" by *Angela Edmunds* and *Anne Morris*, published in *International Journal of Information Management*, are the following most highly cited works in the information literacy literature.

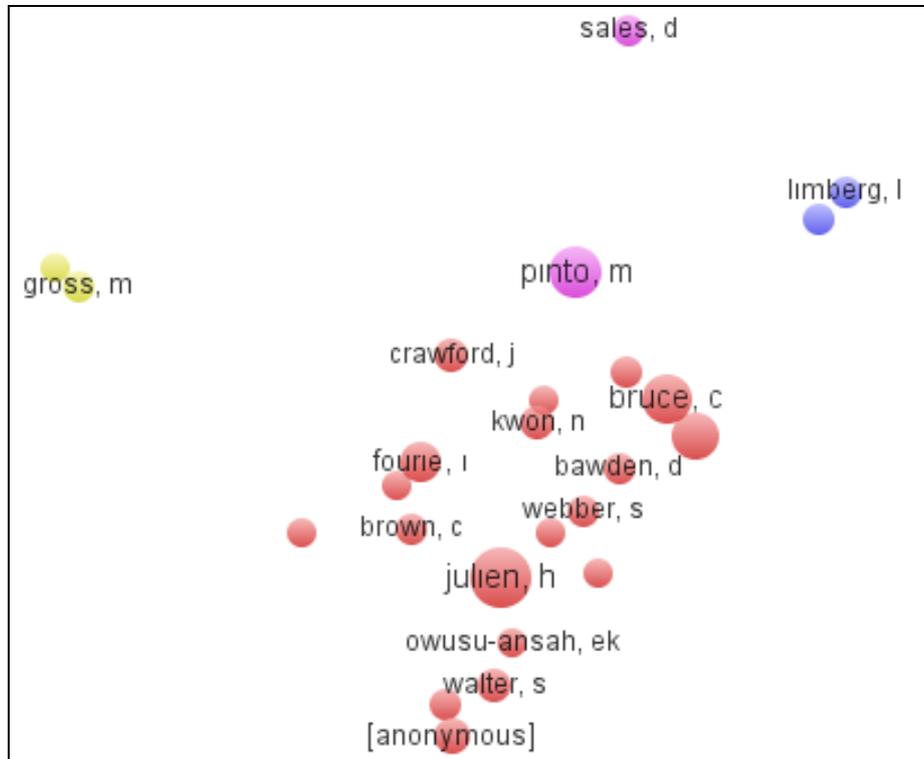
**Table 3.** Most cited first three publications, their authors and publication years

Publications	Authors	Publication years
Information and digital literacies: A review of concepts	Bawden, D	2001
Children's relevance criteria and information seeking on electronic resources	Hirsh, SG	1999
The problem of information overload in business organisations: a review of the literature	Edmunds, A; Morris, A	2000

Figure 3 shows the term co-citation network for the information literacy field created with VosViewer visualization tool. Unsurprisingly, the most prominent term for the field is *literacy*. The other prominent terms are *web*, *user*, *instruction*, *faculty*, *access*, *internet*, *evidence*, *participant*, *project*, *information* and *teacher*.



**Fig. 3.** Term co-citation network



**Fig. 4.** Bibliographic coupling of authors

Figure 4 is a map for bibliographic coupling of authors. Red fields in this map indicate the most prominent authors for the information literacy field. They are Bruce, C. with published 21 papers, Pinto, M. with 16 papers and Julien, H. with 15 papers.

## 5 Conclusion

This study presents the general view of information literacy field based on the papers published in *Web of Science*. The findings of the study may be helpful for students and other starters in this area. These findings may be interpreted widely by the information literacy professionals.

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