



SCHOLARLY COMMUNICATION IN WEB AGE

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Lesson 3

- Assessing your impact
- How to write a scientific paper

Assessing Your Impact





The evaluation society

All members of society are subjects and objects of evaluation during the various stages of life ...

 ***society and culture of evaluation***

(Peter Dahler-Larsen)



The basis of the research evaluation

Coexistence, in all disciplinary sectors, of high level research and poor quality research. The distribution of resources, especially in periods of scarcity of funds, must reward the best research based on a serious evaluation of the quality of the research,  **the need for reliable criteria that are as impartial as possible**. The evaluation of the research requires objective indicators identified with the consent of the scientific communities

The purpose of the research evaluation

Research evaluation **is not the aim** of the evaluation process, but the tool to ensure the improvement of research quality (and consequently contributes to the well-being of society)





What is evaluated for a research product?

- ▶ Quality of research: value of research, in terms of originality of content and methodological "robustness".
 - ▶ Tool: peer review
 - ▶ Limits: subjectivity of peer review
- ▶ Impact: value attributed by the peer community through citations
 - ▶ Tool: calculation of citations / bibliometry
 - ▶ Limits: the work on very specific subjects, while of quality, suffer from little impact in terms of impact
- ▶ Importance: ability to "penetrate" research in the long term



The quality of research

- This is the recognition that the research has been well conducted with reference to the canons prevailing in a certain period within the community of the peers of reference:
 - originality
 - relevance
 - methodological rigor
 - clarity in the exposure ...
- This concept of quality lends itself to being evaluated only by the scientific community of reference that knows and shares the quality standards themselves



The impact of research

The impact of the research is the recognition given in a given time interval to a scientific contribution by the peer community through citations.

Is a highly cited article an article with a high impact in the scientific community?

→ heavily cited item = quality item?

In reality this statement is not entirely true; a contribution can also be mentioned to distance oneself, to criticize the method used, to refute the results obtained, etc. (existence of different styles, weights and citation contexts)

The importance of research

It means the ability to influence research conducted by others in the long run and to pave the way for new avenues for the development of science. If the publications that have this characteristic are certainly of quality, it is not said that they also have an impact.

The importance of a contribution can only be appreciated and assessed in the long term

The "sleeping beauty": publications that go unnoticed for a long period of time (or are not mentioned) and which suddenly attract the attention of the scientific community. The cause of this phenomenon can be traced back to the innovativeness of certain scientific works which, ahead of the times, are not received (Mendel's discoveries in the field of plant genetics are an example: they waited about twenty years before being understood by peers)



The transmission of knowledge

- ▶ The scientist is committed to his work to achieve the priority of the discovery
- ▶ The scientist is pushed to make the results of the discovery public in the shortest possible time and is required to demonstrate the originality of his thought while showing the contribution of the work of others to his discovered through citation
- ▶ The more a work is cited by others the more the scientist increases his reputation



Bibliometric purposes

Among the main purposes of bibliometry:

- Measure the development and vitality of a disciplinary sector.
 - Assess the impact of research by individuals or groups of scholars (not necessarily quality)
 - Identify the core scientific journals (core journals) of a disciplinary sector;
 - Providing feedback for the analysis of the development and "consistency" of library purchases and collections
- bibliometrics does not just mean research evaluation!

The accessibility of Journals

The success of citations of a scientific work also depends on the accessibility and prestige of the host magazine

 "Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions" (Peter Suber)





Open Access vs citations

What "impact" does Open Access have on scientific work citations?

- The wider access favors the availability of scientific works (accessibility advantage)
- The faster publication times also make faster any citations of the scientific works (early access advantage)
- Open Access facilitates consultation and downloads of scientific works (download - or usage - advantage)



Type of citations ...

The citations are **not** all the same, not even in relation to the reason for which they are cited: they are generally cited to demonstrate that they have examined the existing scientific literature on the topic being discussed and to support their positions, but the intent can be even that of refuting a scholar or a strand of studies, or one may wish to pay homage to a scholar

A study conducted in 1985 showed that persuasion is the main spring that leads to cite works by other scholars

Terrence A. Brooks (1985), Private acts and public objects: an investigation of citer motivations, "Journal of the American Society for Information Science", 36, n. 4, p. 223-229

A dark blue arrow points to the right from the left edge of the slide. Several thin, curved lines in shades of blue and grey originate from the left side and sweep across the slide towards the right.

Citation indices

A network of relationships is created between cited documents and it is necessary to have a citation index that:

1. index all documents cited in the bibliographies of a set of sources (almost always articles from scientific journals)

and

2. allows you to trace, from a specific document or from a given author, all the documents in the set of sources that cite it



Search by citation vs search by keywords and / or subjects

A search carried out in a bibliographic database with a keyword or subject is generally more targeted than a search through citations.

Searching in a citation index is however very useful to find, starting from a contribution on a topic of one's interest, works on similar more or less recent themes.

Searching for citations is important even in the case of very specific topics with poor bibliographic coverage.

Beyond to bibliometrics: citations on the Web

Web metrics is a branch of bibliometrics that takes into consideration the analysis of web links intended as the correspondent of traditional citations and the development of alternative metrics based on the new communication forms offered by Web 2.0 (web impact assessment, WIA)



... and in Web 2.0

The term alternative metrics or, more briefly, altmetrics, coined in 2010 by Jason Priem and other scholars, refers to a series of alternative web-based metrics in its "social dimension" to be used in addition - and not in alternative - to the most common and tested bibliometric indicators



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ways to Measure Impact

- ▶ Impact of the Journal – Journal Impact Factor
 - ▶ Journal Citation Reports
 - ▶ SCImago
- ▶ Your Impact based on citations to articles
 - ▶ Comprehensive Resources with Citation Information
 - ▶ Web of Science
 - ▶ Scopus
 - ▶ Google Scholar
 - ▶ Above databases also calculate the **h-index**
 - ▶ Also databases with limited citation information
 - ▶ CINAHL (EBSCOHOST), PsycInfo (CSA), PubMed/ PubMed Central, EMBASE (Science Direct), Scifinder
- ▶ Altmetrics - Web 2.0 (Likes, Tweets, Shares)
 - ▶ total-impact.org (now called ImpactStory); CitedIn
 - ▶ Plos, Scopus
- ▶ <http://researchguides.uic.edu/if>

H Index

- ▶ An index to quantify an individual's scientific research output. J.E. Hirsch
- ▶ The ***h-index*** is based on the set of a researcher's most cited papers and the number of citations that the researcher has received in other people's publications
- ▶ “A scientist has index h if h of [his/her] N_p papers have at least h citations each, and the other $(N_p - h)$ papers have at most h citations each.”
- ▶ variants of h -index
 - ▶ g -index
 - ▶ a -index
 - ▶ and more...

Calculating H-Index

Article # ---- Times Cited

➤ 1	-----	87
➤ 2	-----	70
➤ 3	-----	46
➤ 5	-----	19
➤ 6	-----	15
➤ 7	-----	10
➤ 8	-----	9
➤ 9	-----	8
➤ 10	-----	6
➤ 11	-----	4
➤ 12	-----	1

A scientist has index h if h of [his/her] N_p papers have at least h citations each, and the other $(N_p - h)$ papers have at most h citations each

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➤ 8 ----- 9

➤ 9 ----- 8

➤ 10 ----- 6

➤ 11 ----- 4

➤ 12 ----- 1

8 articles have been cited at least 8 or more times and the remaining articles have been cited 8 or less

A scientist has index h if h of [his/her] N_p papers have at least h citations each, and the other $(N_p - h)$ papers have at most h citations each

... a little practice ...



How to write a scientific paper



Typical organization of a scientific paper

1. **Title** (title page)

- a) to. It provides the very first information on the content of the article
- b) If necessary, it can be completed with a subtitle
- c) Avoid too general titles (little information) and without character (little attraction)

2. **Abstract** - summarizes the entire work in summary

- a) Short and clear (150-200 words)
- b) It must tell the reader whether or not he is interested in that article
- c) It should include:
 - i. A brief description of the object of study
 - ii. A brief description of the study method
 - iii. A brief mention of the main results
 - iv. A brief mention of the conclusions



1. **Introduction** - introduces the work

- a) It informs the reader about the topic and purpose of the article and how the article wants to help overcome a knowledge gap or to improve knowledge of something
- b) It should contain at least four paragraphs:
 - i. General introduction
 - ii. Brief review of the existing literature
 - iii. Its correlation with current studies
 - iv. An explicit reference to the purpose
- c) It should generate interest in reading by highlighting:
 - i. Why the study was made
 - ii. Because it is important
 - iii. Why it is innovative (how it differs from other studies)



4. **Body of the article** - describes the study in detail

a) Presents the methods used

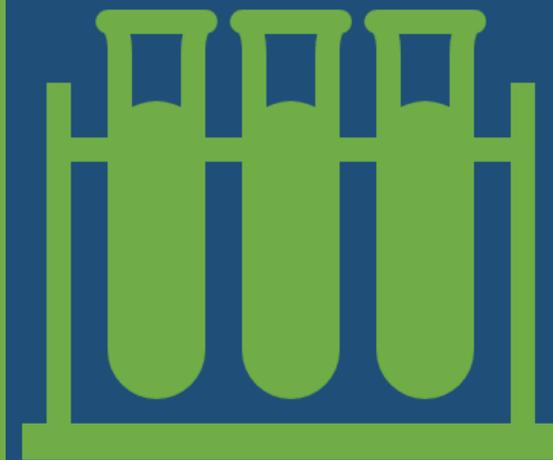
- i. It details what has been done
- ii. The information provided should be sufficient to allow replication (or continue) the experience by reporting:
 1. Who participated in the work
 2. What materials have been used
 3. What procedures have been followed

b) Present the Results obtained in terms of:

- i. Collected data
- ii. Analysis carried out on the collected data
 1. They provide sufficient detail to allow the reader to draw his own
 2. own conclusions
 3. They are enriched where possible with figures, tables and graphs



5. **Conclusions** - expose, in a critical key, the main results achieved
 - a) The conclusions must make sense even if isolated from the rest of the article
 - b) They report the main results achieved
 - c) The results are interpreted
 - d) The results are related to other research
 - e) Research is critically evaluated
 - f) Further developments are suggested
6. **References**
 - a) They serve to clarify "who did what" and where the ideas come from
 - b) They are useful for any further information
7. **Any appendices** - when it is useful to attach some details of the work done (codes and more ...) too bulky to be inserted in the body of the text.





"The best way to learn to write is to read"
Victor Hugo



Questions & Answer

