Training of trainers - Educational strategies in STEM IL

How to evaluate the quality of scientific journals

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Intro

In this presentation, I will introduce a reflection on the contents to be addressed with scientists who want:

- to choose a journal to publish an article
- and therefore, assess the potential journals

To do this, we need to:

- see what abilities we are talking about
- talk about processes
- talk about evaluation methods
- talk about criteria (including bibliometric tools)

How to choose a scientific journal was the subject of the first learning unit (LU1).

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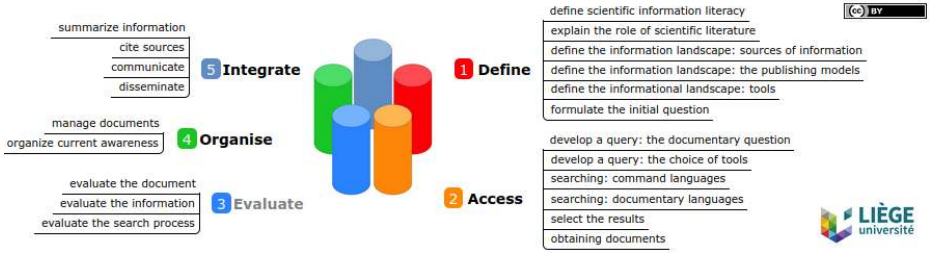
Scientific Information Literacy Framework

It is important to identify what is involved. For this, We use a framework to identify the relevant abilities.



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Scientific Information Literacy Framework

For the first learning unit, the first pillar is involved

Presentation

Construction of the framework

1. Define

1.1. Define scientific information literacy

1.2. Explain the role of scientific literature

1.3. Define the information landscape: sources of information

1.4. Define the information landscape: the publishing models

1.5. Define the informational landscape: tools

1.3. Define the information landscape: sources of information

1 _ _ explain that scientific literature is characterized by its validation process

1 _ _ identify the types of documents (journals, books, etc.) specific to the discipline, list the main characteristics of these documents (including medium)

_ **2** _ explain the role of scientific publishers, editorial boards and reviewers in the scientific publication process

_ **2** _ describe the role of bibliometric tools in the ranking of journals

_ _ **3** list bibliometric indicators specific to the discipline

_ _ **3** estimate the role and limitations of bibliometric indicators

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1.4. Define the information landscape: the publishing models

1 _ _ describe the role of publishers and the costs of scientific publishing

1 _ _ explain the principles of open access

_ **2** _ question the costs of scientific publishing (Article Processing Charges...)

_ **2** _ explain the excesses of scientific publishing (hybrid publishers, predatory publishers, etc)

_ _ **3** describe archiving and copyright policies

_ _ **3** Assess the relevance of new modes of scientific communication (researchers' blogs, research notebooks, preprint distribution, etc.)

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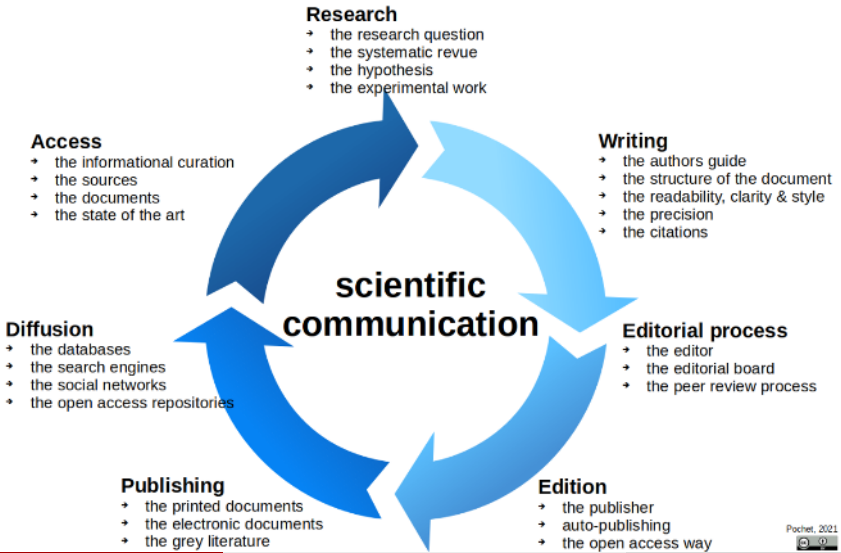
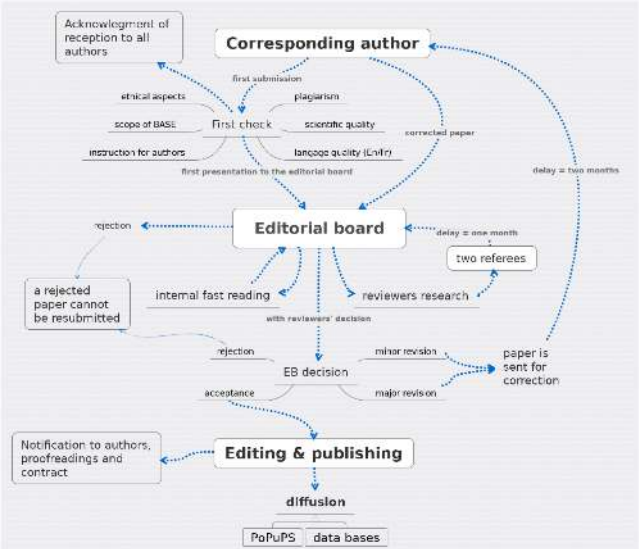
Scientific literature is processes



Editorial process: it is important to fully understand it



Editorial process: it is important to fully understand it

Understanding the different steps is essential to:

- know how to submit an article
- identify what is important for this journal
- understand the specific process of a journal (time frames, people involved, validation process…)

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Learning outcomes (for LU1)

At the end of this learning unit learners will be able to:

- find scientific journals by topic or discipline
- evaluate the quality of scientific journal
- identify the news issues in research assessment practices
- acquire effective strategies
- acquire awareness about habits and behavior in this field

For an author, how to choose a scientific journal is an important part of the scientific publication process. It affects:

- the visibility of the scientific production (databases, territories...)
- the final quality of the document
- the prestige (but this is a mistake)

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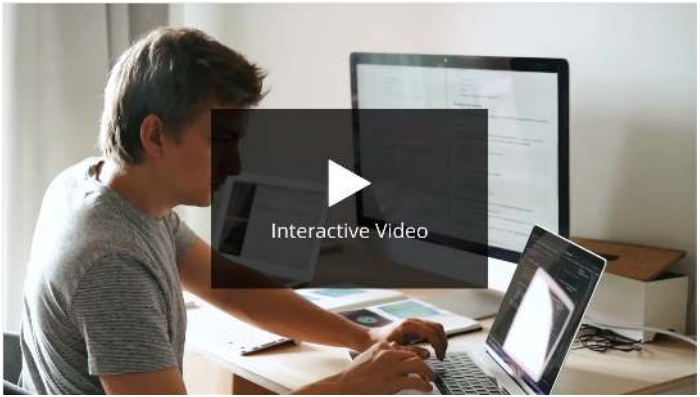
Learning method : Problem Based Learning (presented by Mario Rotta)



Based on a case study:

"Paul is a young researcher who works as research fellow at public Research Center in a European Country...

1. Find scientific journals by topic or discipline

The “easy” part. We have at our disposal a variety of tools:

- journal catalogs
- the titles of “usual” journals in a research field
- the titles of journals that appear after a documentary search

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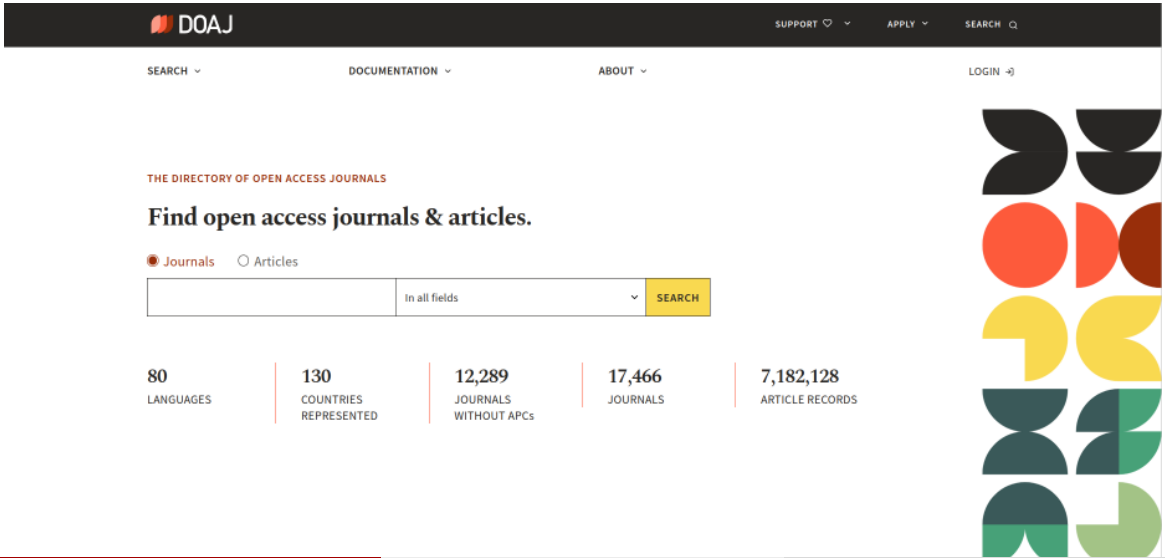
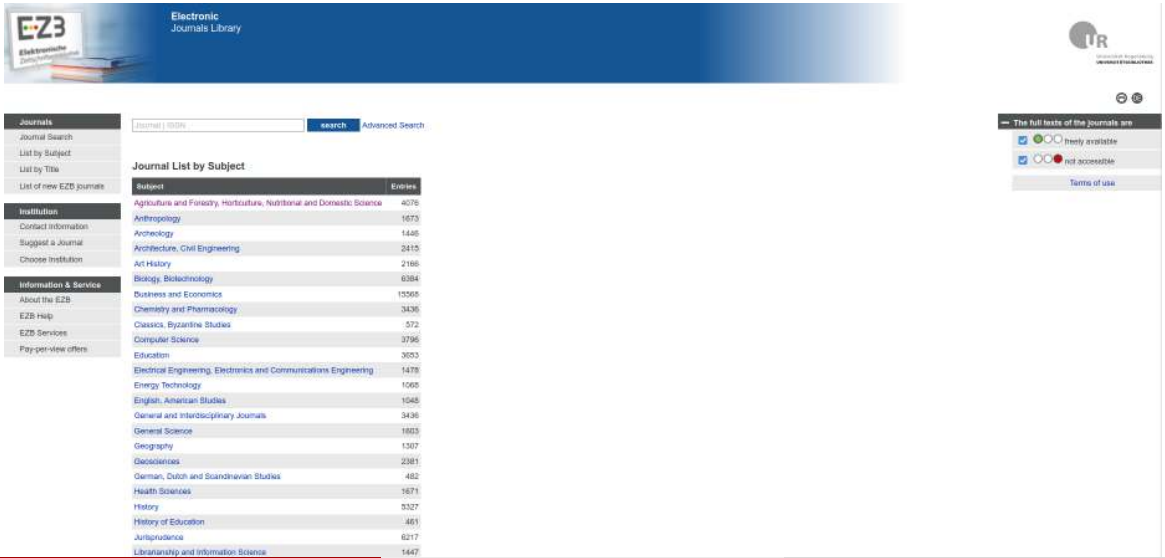
Some examples



Some examples



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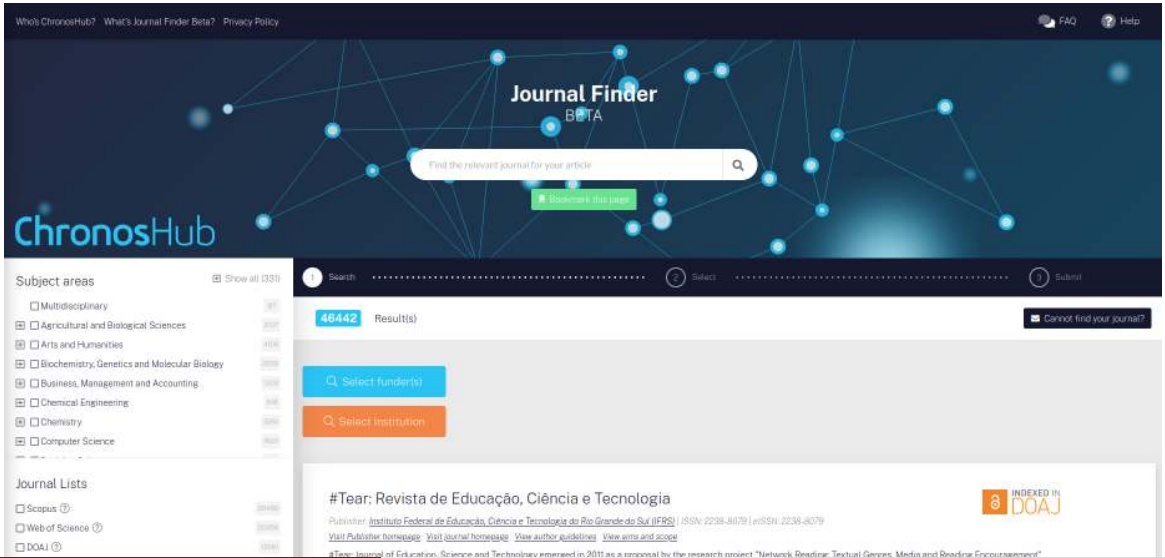

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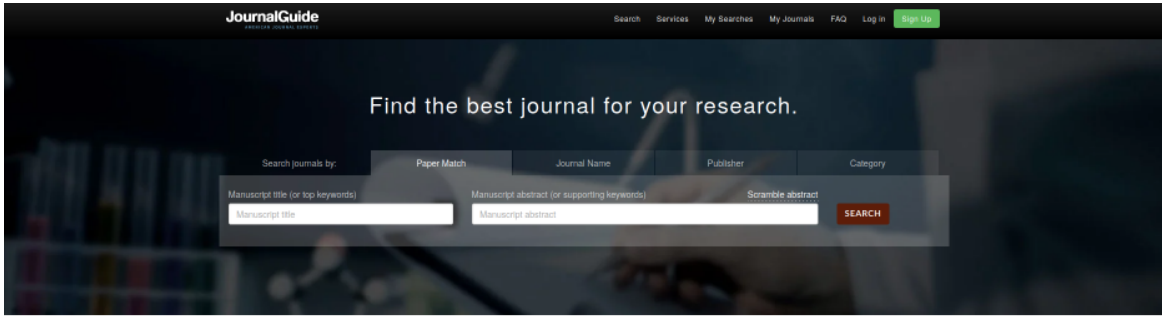

2. Evaluate the quality of scientific journals

To evaluate quality, the first reflex is to use bibliometric tools: Impact Factor, Snip, H index...

But..

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A bit of history ...

1928

Publish or Perish, concept used for the first time in: Marsh C., 1928. Scholarship in Sociology. *Sociology and Social Research*. **12**, 323–340.

after WWII

Increase of research and of scientific publication:

- commercial publishers
- English language
- international journals

1969

Eugene Garfield (ISI) Publishes the **Science Citation Index** with **Impact Factor** ranking to help librarians identify which journals to purchase

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A bit of history ...

then ...

- purchase by some[a] publishers of titles with **impact factor**
- constitution of catalogs of "**prestigious**" journals by these publishers
- publishers (and journals) have gradually become "**a must**" for researchers
- progressive confusion between "**prestige**" and "**quality**"

[a] Elsevier, Springer, Wiley,Taylors, Blackwell...

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About impact factor!

- Count a number of citations of papers of a journal
- Does not measure quality but number of citations
- Inequality between domains (biotechnology ++)
- Essentially Anglo-Saxon journals
- **Never give a level of quality of a paper/scientist!**

The best way is:

- Read papers
- use other sources of information about a scientist

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They are other metrics (ISI keeps monopoly til 2004) based on citations

- Scopus metrics (Elsevier): Citescore (= Impact factor), H index, SRJ...
- Google metrics: Citations count, H5 index...
- Altmetrics (audience)

Linked issues are:

- the number of citations represents popularity not quality
- excellence (of a journal) is not a synonym for excellent!
- Open Science also makes the scientific process more transparent, inclusive and democratic
- financial issues (APC and paywall)
- Predatory publishers is also an issue (more than 10 000 journals!)

The problem is then mainly related to the research assessment

-> The confusion of prestige and quality!

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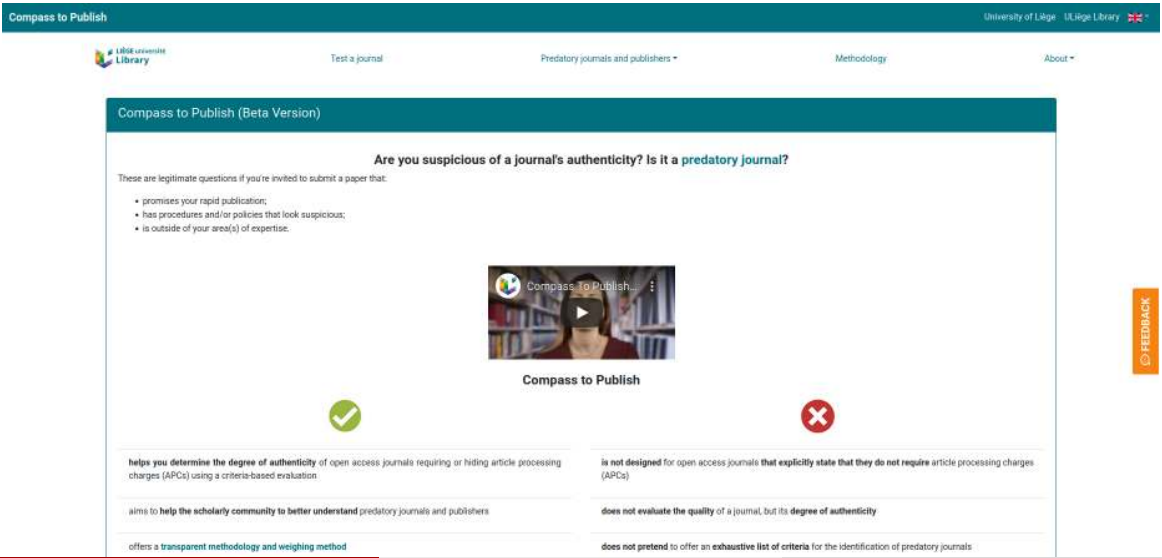
An help about predatory publishers



At the end, there are other points of attention in choosing a journal:

- Rights management (see Sherpa/Romeo)
- international recognition
- visibility (search engines and bibliographic databases)
- specificity (generalist or specialized, language...)
- type of distribution (eJournal, frequency, duration)
- authors' guide (length, structure, bibliographic style, illustrations...)

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All sources of information, including metrics (never use only one), will guide the choice of the right journal

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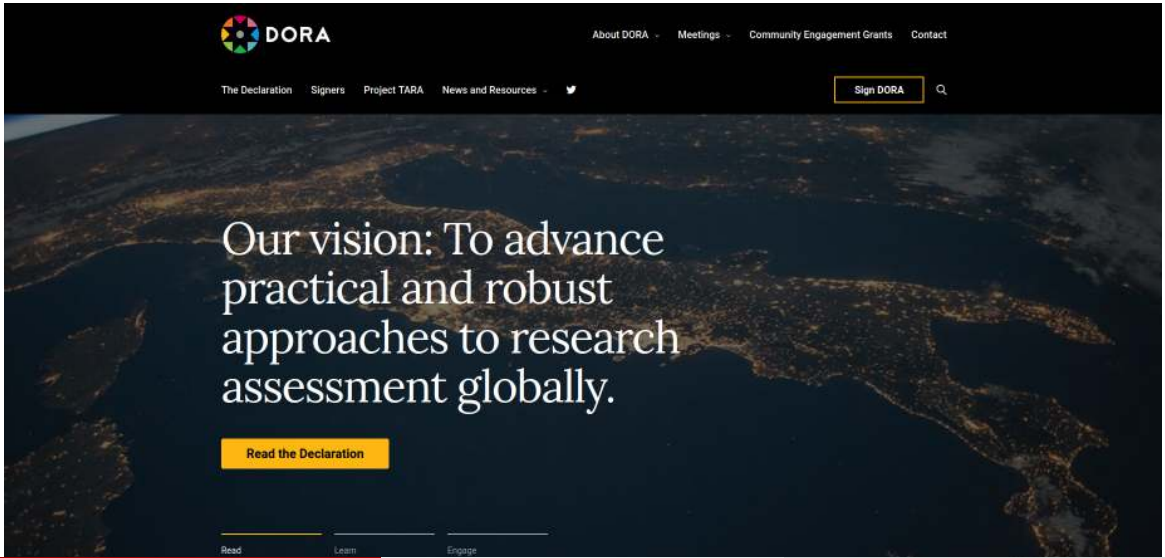
3. Identify the news issues in research assessment practices



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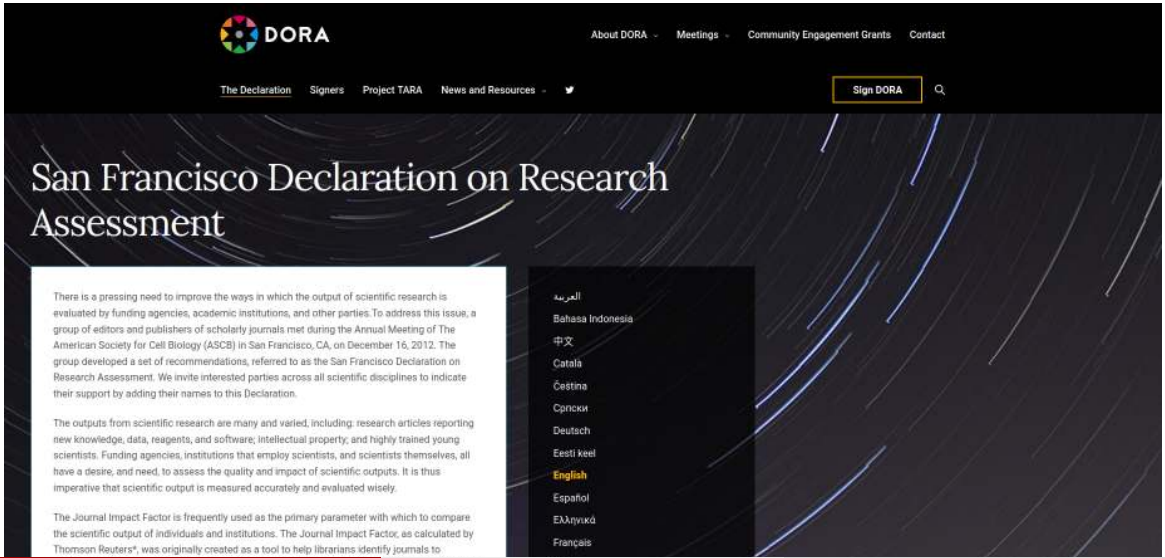

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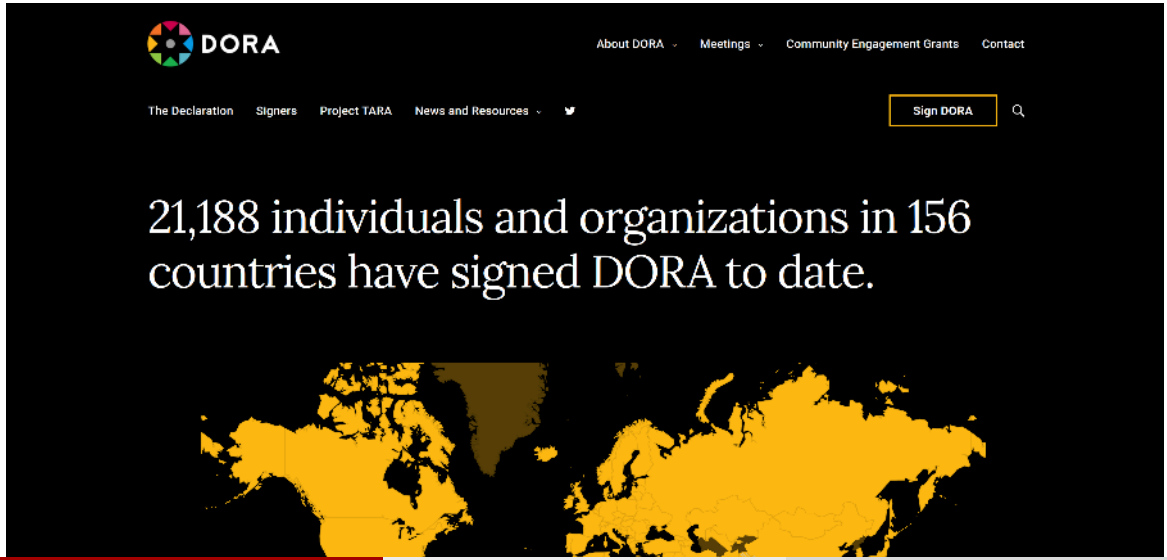

4. Acquire effective strategies

Scientist have to think about the following questions:

- What defines the value of scientific journal?
- How can you evaluate a scientific journal?
- Can publication aims, research assessment, open science influence the judgment? How?
- Which other factors can or should be taken into account?

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5. Acquire awareness about habits and behavior in this field

At the end, they have to know that:

- The quality of a scientific article do not depends on the quality of the journal in which it is published
- Peer review is the quality control system for scientific research
- The bibliographic citation count of a scientific article varies according to the database considered
- Quartiles of scientific journals vary according to the subject area in which the journal is indexed
- A publisher's membership to the Committee on Publication Ethics (COPE) it offers an indication of the publisher's integrity
- A fraudulent or retracted scientific article can be highly cited
- The Aim and scope section of scientific journals offers key information for submission
- Self-citations influence the calculation of a journal's Impact Factor
- Open in Open Science refers to openness of scientific research data, methods and results
- The DORA Declaration is a declaration aiming to change the criteria for institutional assessment of scientific research
- The DOAJ (Directory of Open Access journals) is an essential source of information
- ...

5. Acquire awareness about habits and behavior in this field

The work has been correctly done if:

- The list of identified journals is extremely diversified, relevant to the research topic and takes into account the different subject areas and publication opportunities
- The identified journals are coherent with data and constraints included in the problem and includes various options for each element
- The scheme presented is clear and complete, distinguishes clearly between the various dimensions (what to evaluate, how to evaluate) adding additional parameters
- All the criteria adopted to attribute value to a journal and the values attributed are explicit
- The work is complete and extremely clear; the strategy applied identified with precision and easily repeatable

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Thank you for your attention[1]

[1] these slides where created with a Markdown file, Beamer and Pandoc

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