BRAIN @ WORK

INFORMATION COMPETENCE AS BOOSTER FOR PROSPECTIVE SCIENTISTS

2022

ASSESSMENT TOOLS

ASSESSMENT TOOLS FOR MEASURING IL-ACQUIRED COMPETENCIES

Examples and strategies
to develop learning units
in problem-based learning environments

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Introduction

The present document is a collection of practical examples aimed at providing re-usable tools for assessing acquired knowledge and training activities perceived quality in problem-based learning paths.

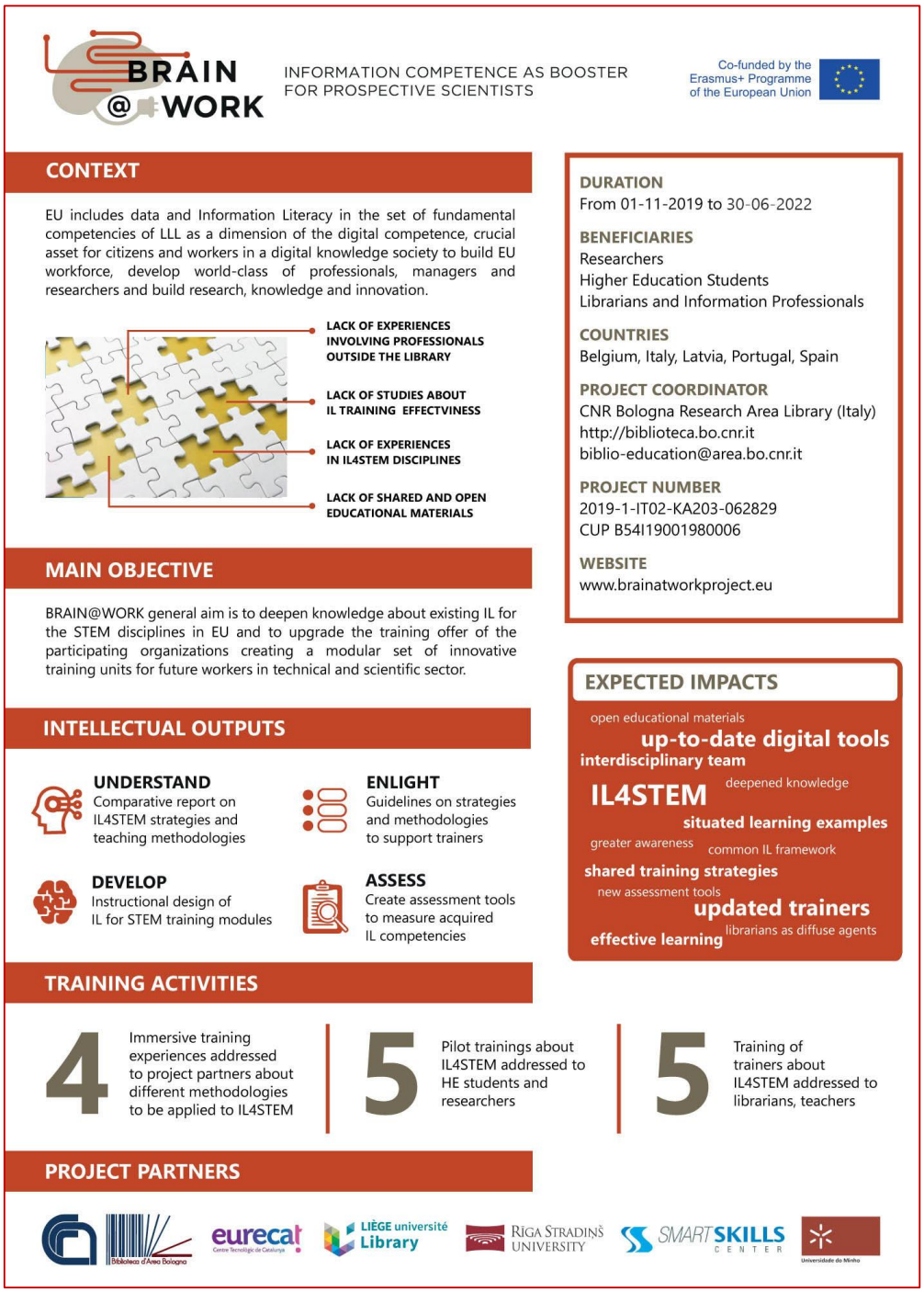

Fig. 1 BRAIN@WORK project at a glance

How and when we evaluated during the realized training activities in BRAIN@WORK project? In the following scheme the main dimensions, criteria, values, tools and timing are reported.

DIMENSION	CRITERIA	VALUE	TIME	TOOL
PARTICIPATION	INTEREST	DIFFERENCE BETWEEN N. OF ENROLLED USERS AND N. OF ACTIVE PARTICIPANTS (USERS LOGGED IN THE FIRST TIME)	EX-ANTE	ENROLLMENT FORM; REPORT OF LOGS
	INTEREST	N. OF PARTICIPANTS ACTIVE DURING THE LAST STEP OF THE COURSE (BEYOND THE PROBLEM)	EX-POST	REPORT OF LOGS
	WORKLOAD	AVERAGE HOURS OF ACTIVITY PER PARTICIPANT PER WEEK; AVERAGE HOURS OF ACTIVITY PER PARTICIPANT FOR EACH PHASE OF THE COURSE	ITINERE	REPORT OF LOGS
	WORKLOAD	COMPARISON BETWEEN THE NUMBER OF HOURS OF THE PLANNED WORKLOAD AND THE NUMBER OF HOURS PERFORMED BY EACH PARTICIPANT	EX-POST	REPORT OF LOGS
	TREND OF PARTECIPATION	DISTRIBUTION OF THE NUMBER OF SESSIONS PER DAY PER PARTICIPANT	ITINERE	REPORT OF LOGS
LEARNING				
	COMPETENCE	COMPARISON OF THE RESULTS OF THE SELF-EVALUATION TOOL	EX-ANTE; EX-POST	SELF-EVALUTATION TOOL
	COMPETENCE	RESULTS OF THE RUBRIC OF FINAL E-TIVITY	EX-POST	RUBRIC
	KNOWLEDGE	RESULTS OF FINAL QUESTIONNAIRE	EX-POST	QUESTIONNAIRE
SATISFACTION				
	SATISFACTION	RESULTS OF THE SATISFACTION QUESTIONNAIRE	EX-POST	QUESTIONNAIRE

Fig. 2 Criteria and data to assess the success of the courses.

Theoretical explanations, contextual information and selected bibliography about the authentic learning assessment are available in the BRAIN@WORK document "*GUIDELINES FOR INSTRUCTORS. Strategies and methodologies to support instructors in the development of problem-based learning environments*".

Only a few points of reflection to be recalled while looking at the examples:

- Authentic evaluation should include real tasks, performances or challenges that reflect those of experts/professionals
- Authentic evaluation is based on observable and measurable abilities
- Self-assessment tests can be useful before and after the course in order to observe progress in the development of individual skills
- Interactive checklists provide participants with an overview of their individual status with respect to the entire course workload
- Evaluation questionnaires can be useful to collect participants' perceptions and suggestions about various aspects of the course in order to improve it.

Chapter 1: The self-evaluation tool

A self-evaluation questionnaire has been used to measure the evolution between the beginning and the end of the training. It has been carried out individually by each participant in the two phases of the course "Towards the problem" and "Beyond the problem".

Based on a rating scale, participants are invited to self-assess their skills or abilities, assigning a value of 1 to 4:

1 = Poor 2 = Basic 3 = Average 4 = Expert.

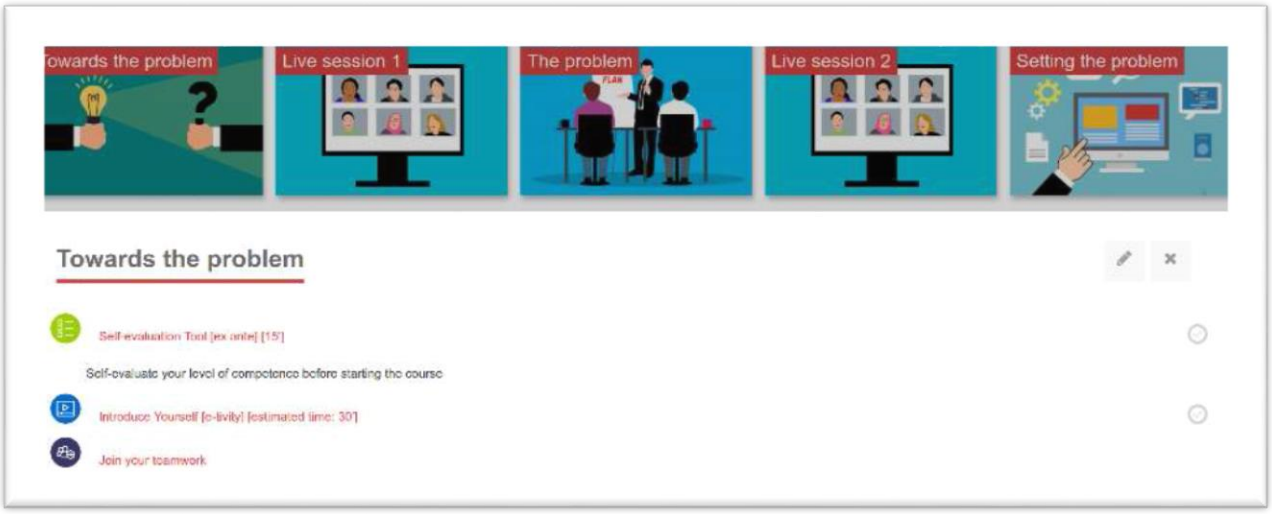

Fig. 3 The "Towards the problem" phase in the learning environment

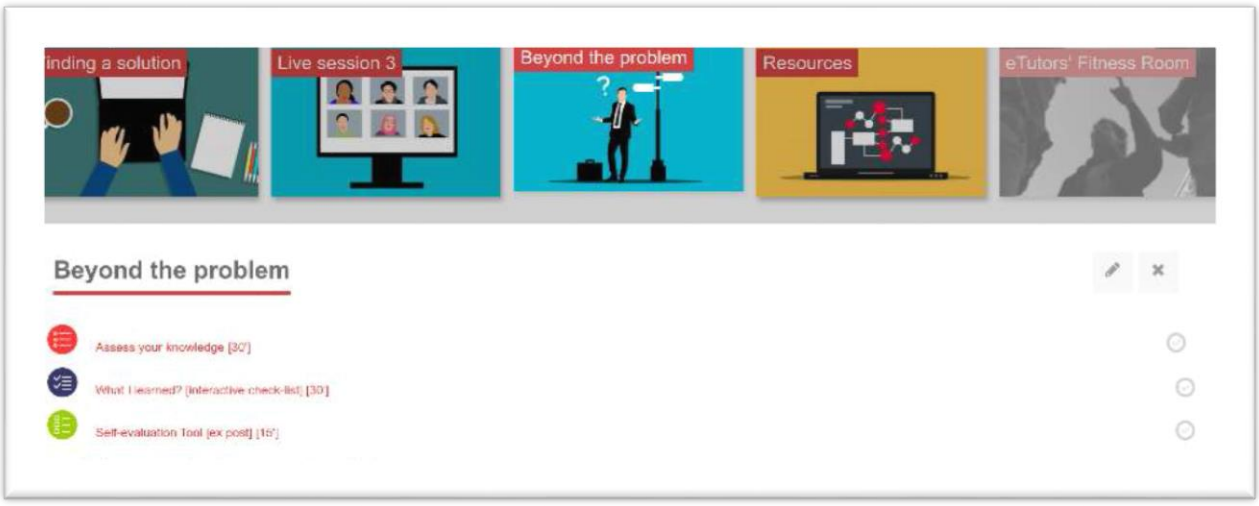

Fig. 4 The "Beyond the problem" phase in the learning environment

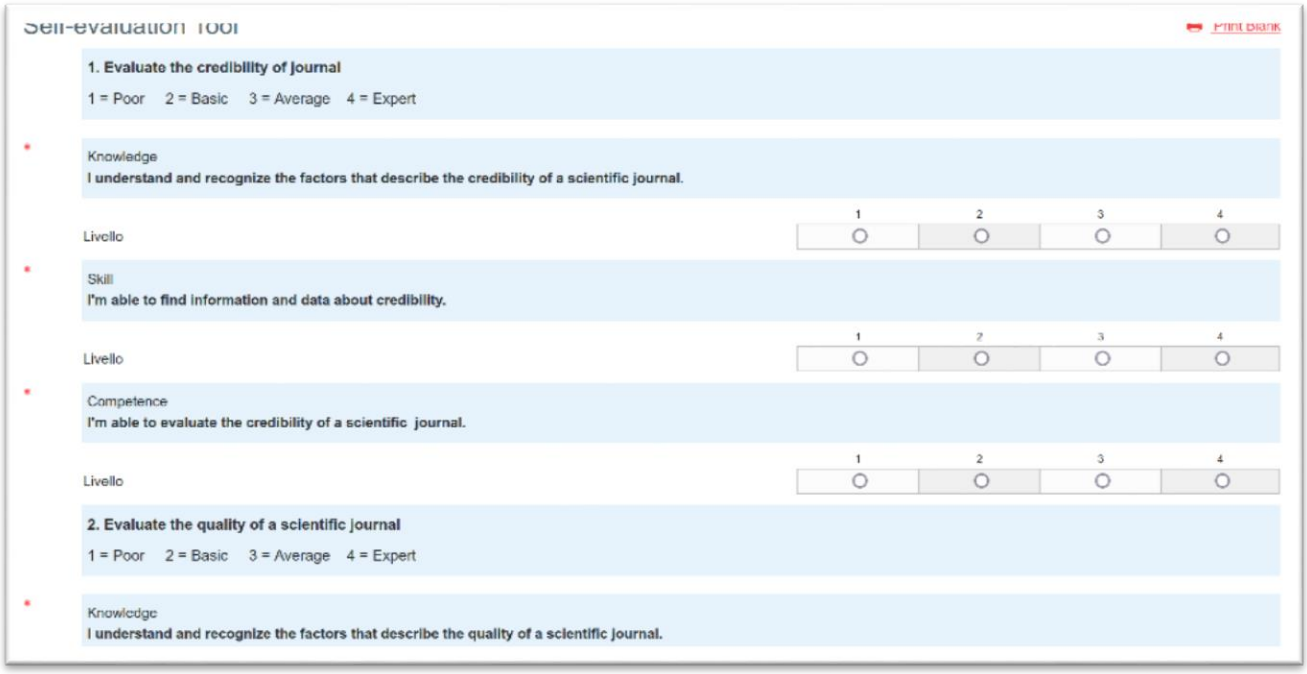

Fig. 5 Extract from the self-evaluation tool as it looks in the learning environment

1.1 List of questions

1. Evaluate the credibility of a journal

Knowledge

I understand and recognize the elements of credibility of a scientific journal.

Skill

I am able to find information and data about credibility.

Competence

I am able to evaluate the credibility of a scientific journal.

2. Evaluate the quality of a scientific journal

Knowledge

I understand and recognize the elements of quality of a scientific journal.

Skill

I am able to find information and data about quality.

Competence

I am able to evaluate the quality of a scientific journal.

3. Evaluate the integrity of a scientific journal

Knowledge

I understand and recognize the elements of integrity of a scientific journal.

Skill

I am able to find information and data about integrity.

Competence

I am able to evaluate the integrity of a scientific journal.

4. Use bibliometrics as an evaluative technique

Knowledge

I know the different bibliometric indicators of a scientific journal.

Skill

I am able to find the bibliometric indicators of a scientific journal.

Competence

I am able to apply bibliometrics to evaluate of a scientific journal.

1.2 Results of self-assessment: two examples

After the end of the courses in each Country, the results of ante and ex-post self-assessments have been compared to observe progresses in the development of individual skills.

Fig. 6 Overview of the self-assessment results in Latvia

Chapter 2: Assessment of the individually acquired knowledge

The questionnaire "Assess your knowledge" and an interactive checklist have been completed individually by each participant in the phase of the course named "Beyond the problem".

2.1 Questionnaire "Assess your knowledge" [30']

Indicate for each of the following statements whether True or False

- The quality of a scientific article depends on the quality of the journal in which it is published *{FALSE}*
- Peer review is the quality control system for scientific research *{TRUE}*
- The bibliographic citation count of a scientific article varies according to the database considered *{TRUE}*
- Quartiles of scientific journals vary according to the subject area in which the journal is indexed *{TRUE}*
- A publisher's membership to the Committee on Publication Ethics (COPE) it offers an indication of the publisher's integrity *{TRUE}*
- A fraudulent or retracted scientific article cannot be highly cited *{FALSE}*
- The Aim and scope section of scientific journals offers key information for submission *{TRUE}*
- Self-citations do not influence the calculation of a journal's Impact Factor *{FALSE}*

Multiple choice (3 choices)

- The term Open in Open Science refers to *{=openness of scientific research data, methods and results ~free accessibility of scientific articles ~publication of scientific research datasets}*
- The DORA Declaration is *{=A declaration aiming to change the criteria for institutional evaluation of scientific research ~A document promoting open access publication of scientific research results ~A manifesto on the abuse of bibliometrics in institutional evaluation of scientific research}*
- Responsible metrics refer to: *{=the appropriate and ethical use of quantitative indicators in the evaluation of scientific research ~the appropriate and ethical use of qualitative*

indicators in the evaluation of scientific research ~the appropriate and ethical use of quantitative indicators in the evaluation of a scientific journal}

- The citation maps are: *{=a tool for analysing the relationships between a set of documents ~graphical scheme of the bibliography of a scientific paper ~map of the citations received by a scientific article}*
- The European Union considers that: *{=both the scientific process and all results of funded projects must be open to all ~all scientific results of funded projects must be reusable for all ~only scientific articles resulting from a funded European project must be open to all}*
- Think. Check. Submit is a checklist supporting the researcher: *{=identifying reliable scientific journals for publication ~ identifying high impact scientific journals for publication ~ identifying open access scientific journals for publication}*
- Sherpa-Romeo is an archive containing: *{=the open access policies of scientific journals and publishers ~the open access policies of open access journals and publishers ~the list of open access journals of scientific societies}*
- Which of the following bibliometric indicators is standardized? *{=SNIP ~Impact Factor ~CiteScore}*
- What is the number of Open Access journals indexed in DOAJ for the subject area of Microbiology? *{=More than 90 ~Less than 10 ~Between 11 and 90}*
- Impact Factor is *{=a non-standardized bibliometric indicator that provides a rough measure of the citation impact of a scientific journal ~a bibliometric indicator that can be used to assess the quality of a scientific article ~a bibliometric indicator whose value increases as the number of citations received by journals in the Scopus database increases ~a standardized bibliometric indicator that does not allow for comparisons between scientific journals from different subject areas}*

Multiple choice (4 choices)

- According to the Leiden Manifesto in research evaluation *{=Percentiles are a robust method of normalisation for disciplinary comparison ~The same bibliometric indicators should be used ~for all disciplines ~Computer scientists would like to be able to count the citations of the books they publish ~The IF value is published with three decimal places because it is based on a very accurate citation calculation}*
- The term Altmetrics refers to*: {=quantitative analysis of the uses of scientific articles on the internet ~qualitative analysis of the uses of scientific articles on the internet ~qualitative analysis of the number of downloads of scientific articles ~qualitative analysis of posts related to scientific articles on social media}*

Matching

- Assign each scientific journal its Scopus quartile for the "Materials science" subject area for the year 2020 *{=Journal of Biomedical Nanotechnology -> Q1 =Emerging Materials Research -> Q4 =Advanced Biology -> Q2}*
- Match each type of peer review with the exact description *{=Blind Peer Review -> Reviewer knows author's identity but not vice versa =Double blind review -> Reviewer does not know author's identity and vice versa =Open peer review -> Reviewer knows author's identity and vice versa}*

Short answer

- Find the most cited article in Web of science in the subject category "Nanoscience and nanotechnology" and indicate how many citations the article has received *{=10062}*
- Find the most cited article in Web of science in the subject category "Nanoscience and nanotechnology" and indicate the title of the journal in which it is published *{=Nature Nanotechnology}*

2.2 Interactive check-list

Towards the problem

- [ ] Self-evaluation Tool [ex ante] [15']
- [ ] Introduce Yourself [e-tivity] [estimated time: 30']

Live session 1

- [ ] Live session 1 [3H]

The problem

- [ ] The value of matters [interactive video] [estimated time: 30']
- [ ] The value of matter [text of the problem]

Live session 2

- [ ] Live session 2 [3H]

Setting the problem

- [ ] What size is it? [estimated time: 30']

Finding a solution

- [ ] Evaluate digital content [subway map]
- [ ] Upload here your solution [estimated time: 30']

Live session 3

- [ ] Live session 3 [3H]

Beyond the problem

- [ ] Self-evaluation Tool [ex post] [15']

Resources

- [ ] Knowledge Base [estimated time: 2H]
- [ ] Collaborative Glossary [estimated time: 2H]
- [ ] Building Knowledge [collaborative Journal] [estimated time: 12H]
- [ ] Discussion Board [integrative facility]

eTutors' Fitness Room

- [ ] Discussion space
- [ ] Agenda for the professionals

Chapter 3: Assessment of the teamwork

3.1 The rubric

The following rubric has been used in the course “How to choose scientific journals? Find, evaluate, select it" organized online in the framework of the EU project "BRAIN @ WORK Information competence as booster for prospective scientists". Aim of the rubric is to assess the quality of the final answer to the problem given by each team of participants.

1. **Identify relevant journals (RELEVANCE)**				
LEVEL	PARTIAL	BASIC	INTERMEDIATE	ADVANCED
SCORE	4-5	6-7	8-9	10
INDICATOR	The list of identified journals is limited and completely out of focus related to the research topic to be published	The list of identified journals is limited and partially relevant to the topic of the research to be published, some journals are not compatible	The list of identified journals is various and relevant to the topic of the research to be published	The list of identified journals is extremely diversified, relevant to the research topic and considers the different subject areas and publication opportunities

2. Select coherent journals (COHERENCE)				
LEVEL	PARTIAL	BASIC	INTERMEDIATE	ADVANCED
SCORE	4-5	6-7	8-9	10
INDICATOR	The list of identified journals disregards data and constraints included in the problem	The list of identified journals considers only partially the data and constraints included in the problem	The list of identified journals is coherent with data and constraints included in the problem	The list of identified journals is coherent with data and constraints included in the problem and includes various options for each element

3. Making the evaluation criteria explicit (EVALUATION)				
LEVEL	PARTIAL	BASIC	INTERMEDIATE	ADVANCED
SCORE	4-5	6-7	8-9	10
INDICATOR	The submitted scheme is confused, the various dimensions are not clearly distinguished (what to evaluate, how to evaluate) and the adopted evaluation criteria are not made explicit.	The submitted scheme is quite clear, the various dimensions are only partially distinguished (what to evaluate, how to evaluate) and the adopted evaluation criteria are partially made explicit.	The scheme presented is clear, it distinguishes clearly between the various dimensions (what to evaluate, how to evaluate) and makes explicit all the criteria used to attribute value to a journal.	The scheme presented is clear and complete, distinguishes clearly between the various dimensions dimensions (what to evaluate, how to evaluate) adding additional parameters, making explicit all the criteria adopted to attribute value to a magazine and the values attributed.

4. Building an effective solution (EFFECTIVENESS)				
LEVEL	PARTIAL	BASIC	INTERMEDIATE	ADVANCED
SCORE	4-5	6-7	8-9	10
INDICATOR	The work is incomplete; the strategy adopted shows some gaps and is uncertain; description absent or poor.	The work is quite complete; the strategy applied sufficiently understandable and synthetically described.	The work is complete and clear; the strategy applied is identified with precision and well described.	The work is complete and extremely clear; the strategy applied identified with precision and easily repeatable.

5. Overall quality of work (QUALITY)				
LEVEL	PARTIAL	BASIC	INTERMEDIATE	ADVANCED
SCORE	4-5	6-7	8-9	10
INDICATOR	Insufficient work	Fairly complete work	Complete and of a good standard	Complete work, enriched beyond requests and of excellent level

3. 2 Examples of final teamwork

This chapter reports, as examples, the final works produced by the four teams who attended the Italian version of the course “How to choose scientific journals? Find, evaluate, select it". The course took place in the period September – October 2020.

The teams realized and presented their works - containing the answers given to the problem and the rationale implied – which, at the end of the course, have been collected in the collaborative journal **The Book of Knowledge**. The Book of Knowledge includes all team works, the knowledge base and the glossary collectively composed during the course.

In relation to these examples, an overview of how they have been assessed is also reported.

For a deeper understanding of the examples, some data regarding the participants to this course can be useful.

3.2.1 Data about the participants to the course held in Italy

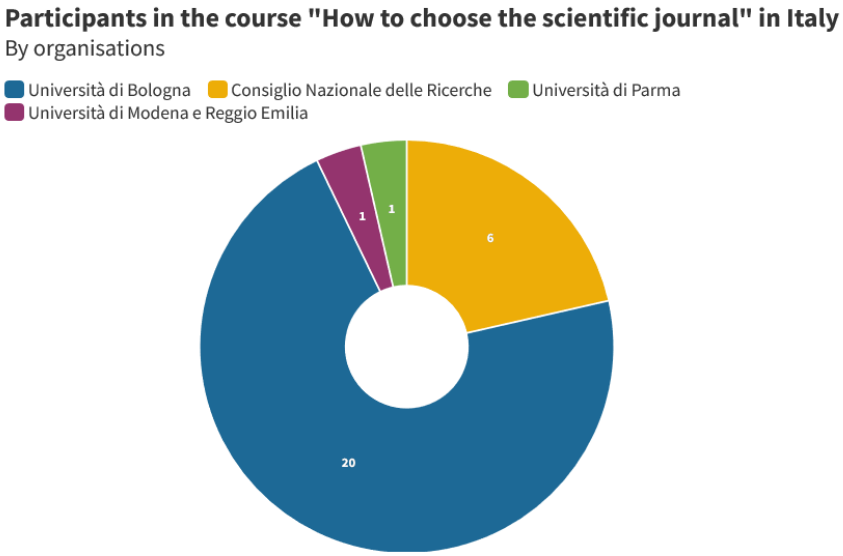

Fig. 8 Participants' organisations

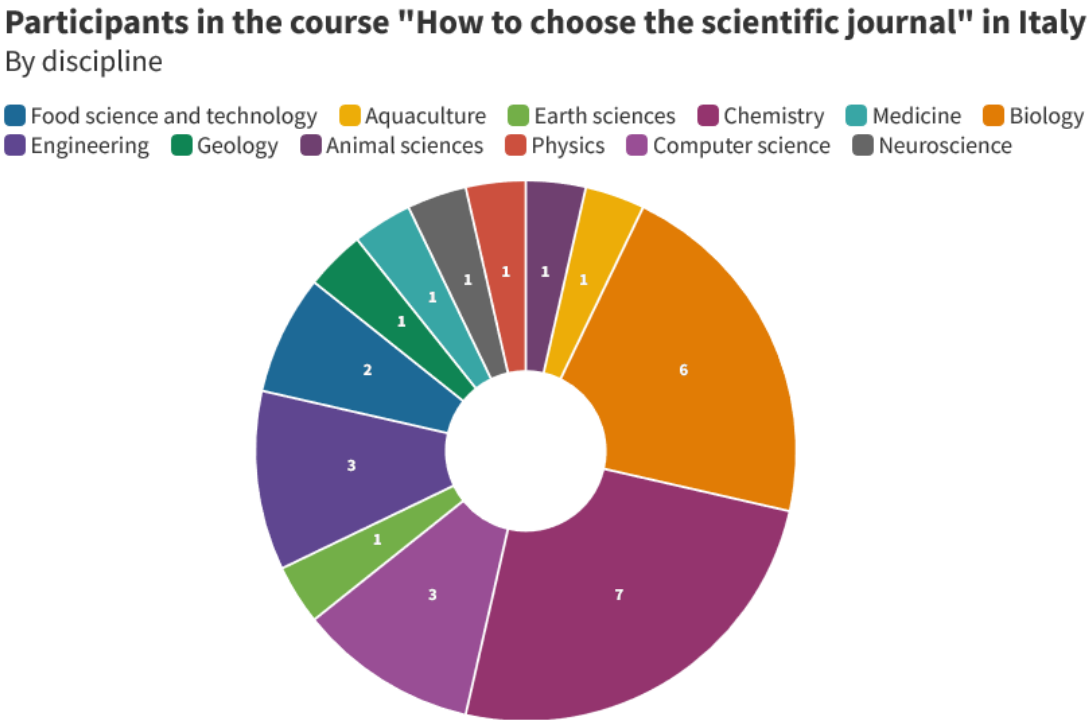

Fig. 9 Participants' disciplines

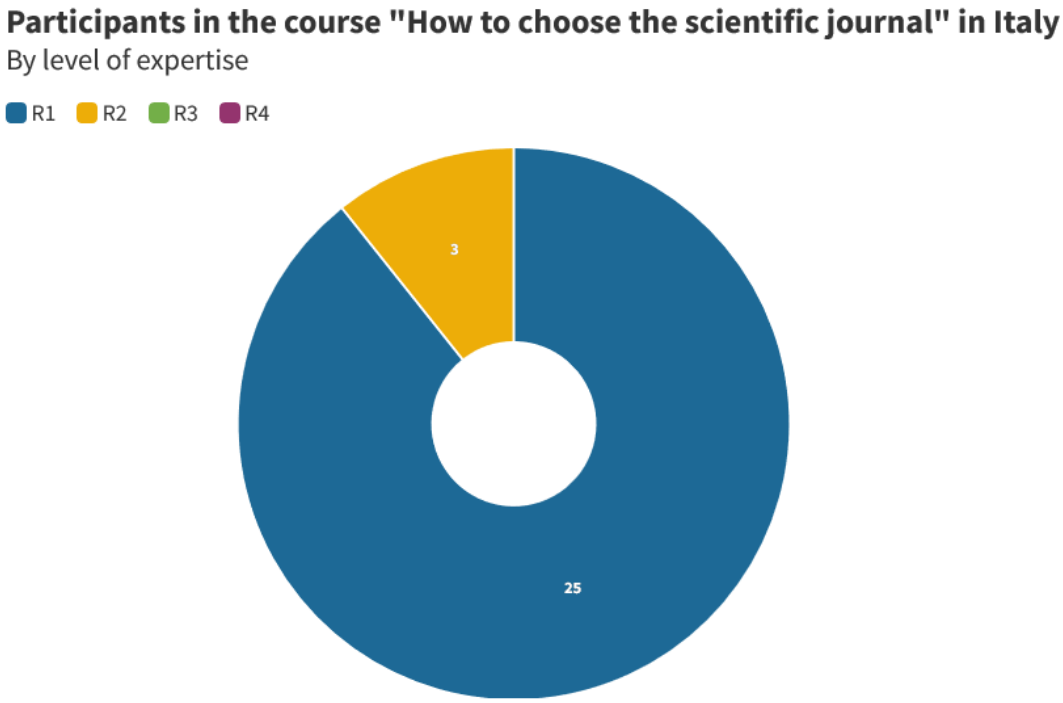

Fig. 10 Participants' self-declared level of expertise

Tab. 1 The four career stages outlined and defined in the European Commission's communication 'Towards a European Framework for Research Careers'

R1	First Stage Researcher (up to the point of PhD)
R2	Recognised Researcher (PhD holders or equivalent who are not yet fully independent)
R3	Established Researcher (researchers who have developed a level of independence)
R4	Leading Researcher (researchers leading their research area or field)

Source:
https://cdn5.euraxess.org/sites/default/files/policy_library/towards_a_european_framework_for_research_careers_final.pdf

For more information about this specific course:
https://www.brainatworkproject.eu/announcement/training-italy/

3.2.2 The Book of Knowledge [collaborative Journal]

Building Knowledge

Site: Brain@Work - www.brainatworkproject.eu

Course: How to choose scientific journals [BW PBC] [1IT]

Book: Building Knowledge [collaborative Journal]

Estimated time: 12h

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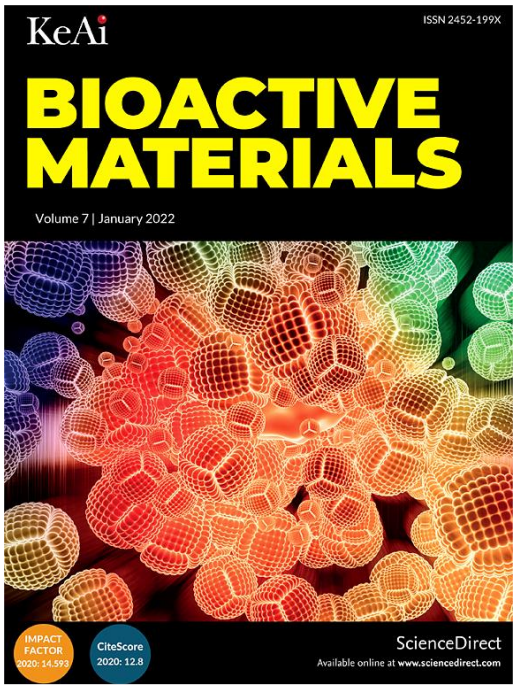
Team 1 [blues]

Value of a journal

The value of a journal depends on the following four macro-value areas:

1. the appropriateness (relevance) of content and purpose,
2. the reliability and integrity
3. the capacity for dissemination,
4. performance and prestige.



Relevance refers to the coherence of disciplinary areas and the pertinence of objectives and aims.

Reliability and integrity are related to the type of peer-review, the composition of the editorial board, and adherence to integrity policies.

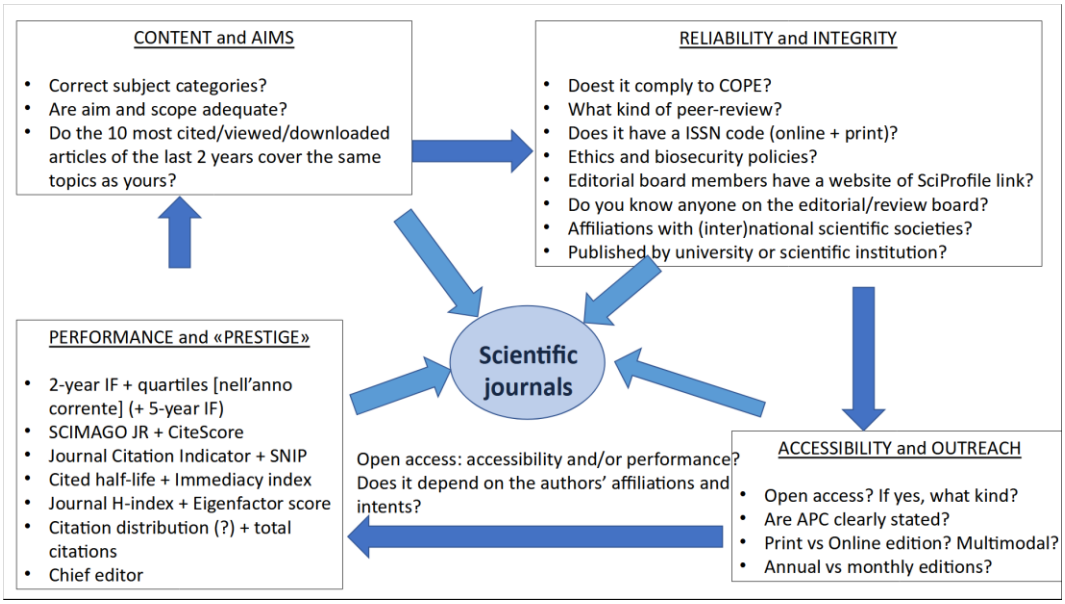
Performance and prestige are expressed by the values of bibliometric indicators of impact and ranking.

Dissemination capacity refers to open access publication and accessibility to the author's publication possibilities.

Open access is understood both as an indicator of accessibility and as a performance enhancer.

Evaluation criteria

The related values and valuation criteria are summarised in the following diagram, which also explains their interconnections.



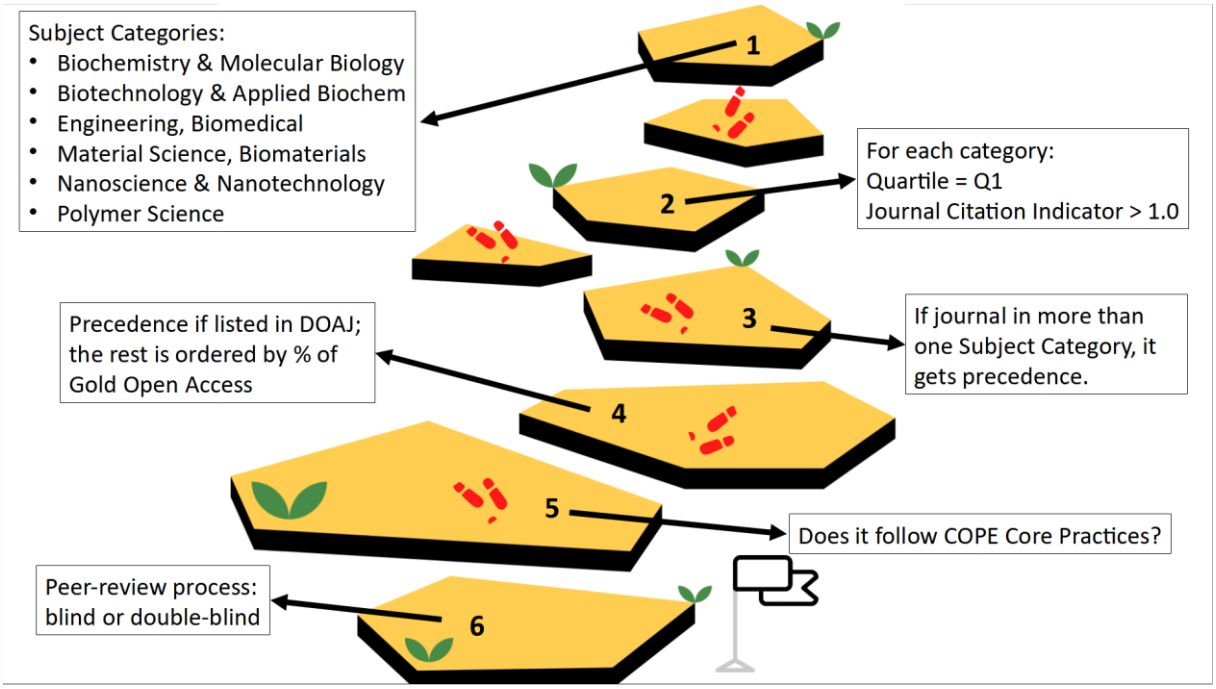
Searching strategy

In order to identify journals compatible with the research topic, it is suggested to use the Journal Citation Report database and identify all potential subject categories consistent with the research subject areas.

Evaluation strategy

The choice of the type of journal to publish in is made by applying the steps below and illustrated in the diagram:

1. identification of the journals indexed in the JCR
2. selection according to quartile ranking and JC Indicator
3. no. of subject categories for indexing
4. indexing in DOAJ
5. adherence to COPE policies
6. type of peer-review adopted
7. comparison on the basis of the bibliometric indicators adopted



Final presentation

For each category:
Quartile = Q1
Journal Citation Indicator > 1.0

Subject Categories:
- Biochemistry & Molecular Biology (57)
- Biotechnology & Applied Micro (28)
- Engineering, Biomedical (20)
- Material Science, Biomaterials (9)
- Nanoscience & Nanotechnology (24)
- Polymer Science (14)

Journals in multiple S.C: 13

Bioactive Materials (2)
Biomaterials (2)
Biofabrication (2)
Advanced Healthcare Materials (3)
Acta Biomaterialia (2)
Materials Today Bio (2)
International Journal of Bioprinting (2)
Biomacromolecules (2)
International Journal of Biological Macromolecules (2)
Biosensors & Bioelectronics (2)
Artificial Cells Nanomedicine & Biotechnology (3)*
Journal of Nanobiotechnology (2)
Genome Research (2)

Bibliometric Indicators

	SJR 2020	IF (JCR) 2020 with self citations	IF (JCR) 2020- no self citations	CiteScore 2020	SNIP (Scopus)	OA
Bioactive Materials	2.172	14.593	14.058	12.8	2.961	*
Biomaterials	3.209	12.479	11.989	20.1	1.913	*
Biofabrication	2.328	9.954	9.212	13.9	1.621	
Advanced Healthcare Materials	2.288	9.933	9.524	13.4	1.397	
Acta Biomaterialia	1.944	8.947	8.516	14	1.781	
Materials Today Bio	1.454	7.348	7.174	4	1.944	*
International Journal of Bioprinting	1.014	6.638	5.66	7.6	1.091	
Biomacromolecules	1.689	6.988	6.551	10.6	1.278	
International Journal of Biological Macromolecules	1.14	6.953	5.67	8.5	1.579	
Biosensors & Bioelectronics	2.546	10.618	9.83	19.4	1.771	
Artificial Cells Nanomedicine & Biotechnology	0.935	5.678	5.581	8.3	1.163	*
Journal of Nanobiotechnology	1.629	10.435	10.242	10.5	1.78	*
Genome Research	9.556	9.043	8.834	19.8	3.08	

Learning process

1 - The value of matter

The group discussed about the first scheduled topics, in particular we tried to answer the proposed questions, which were:

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

A brief of the discussion is presented in the followings:

Q1: What defines the value of a scientific journal?

A1: We agreed that journal metrics (impact factor, acceptance rate, citation index, altmetrics) are a formal tool to define the value of a scientific journal. Another basic bibliometric indicator is Scimago Journal Rank (SJR) introduced as an alternative to impact factor. It is calculated both by counting the number of citations and by evaluating the prestige of the journal from which the citation received comes.

Q2: How can you evaluate a scientific journal?

A2: The answer links back to the first question, as formal metrics and rankings allow for the comparative evaluation of scientific journals. However, it has been noted that more journal-specific parameters, such as the concordance between the content of an article to be submitted and the aim of the journal, the content of the articles already published in the journal and the composition of the Editorial and Scientific boards could play a role in selecting between two journals with comparable metrics.

Q3: Can publication aims, research assessment, open science influence judgement? How?

A3: The group agreed that these variables can greatly influence the choice of a scientific journal for publication, especially now that mass media communication provides wider access to scientific research for everybody, without the direct guarantee of good quality science and methodology. We also briefly discussed about the possible problem of "hot topics", as scientific journals, regardless of the declared aims, maybe more accepting towards articles on what is traditionally considered a hot topic (e.g. cancer genetics, therapeutics, pharmacology) or novel emerging trends (e.g. COVID-19 and immunology, CRISPR-Cas9 and gene editing technologies).

Q4: What other factors can or should be taken into account?

A4: We agreed that the process of peer-review and whether the journal is open access or not are factors to be taken into account. Also, the national or international nature of the scientific journal could be considered. Moreover, as most of the publishing companies are either European-or American-based, reflecting on the opportunity to publish with other (African-, Asian- or South American-based and regional) journals as a way of avoiding Eurocentrism in the dissemination of science and culture may be something to reflect upon.

2 - What size is it?

We agreed to discuss about these three journals, respectively:

- one from the area of nanomaterials →Nano Today;
- one from the area of molecular biology →NATURE MEDICINE;
- one from interdisciplinary journal from the overlapped areas, i.e. biosensors or applied microbiology --->International Journal of Nanomedicine

Data are provided for 2019

IF analysis

Nano Today: 16.907 (without self-citations 16.433);

NATURE MEDICINE: 36.130 (without self-citations 35.752);

International Journal of Nanomedicine: 5.115 (without self-citations 4.769).

IF is all about number of citations and doesn't consider research field. It could be useful for a quick journals review, but a deeper analysis is required.

Scimago Journal Ranking analysis

Nano Today: 6.198;

NATURE MEDICINE: 15.812;

International Journal of Nanomedicine: 1.061.

SJR accounts for citations prestige, resulting in a more suitable index compared to IF.

Journal Ranking and quartile scores

Nano Today: Q1

- Q1 SJR: bioengineering, biomedical engineering, biotechnology, materials science, medicine (miscellaneus); nanoscience e nanotechnology, pharmaceutical science;
- Q1 InCities: materials science, multidisciplinary, chemistry.

NATURE MEDICINE: Q1

- Q1 SJR: biochemistry, genetics and molecular biology + medicine (miscellaneus);
- Q1 InCities: cell biology and molecular biology.

International Journal of Nanomedicine: Q1 pharmacology, Q2 nanoscience

- Q1 SJR: bioengineering, biomaterials, biophysics, drug discovery, medicine, organic chemistry, pharmaceutical science;
- Q2 SJR: nanoscience e nanotechnology;
- Q1 InCities: pharmacology and pharmacy;
- Q2 InCities: nanoscience and nanotechnology.

Quartile scores incorporate journals from very different IF or SJR.

SNIP

Nano Today: 2.948;
NATURE MEDICINE 5.856;
Internal Journal of Nanomedicine: 1.38.

SNIP could be an interesting index because of its capability of referencing the prestige of the citation to other research fields.

3 - The evaluation map

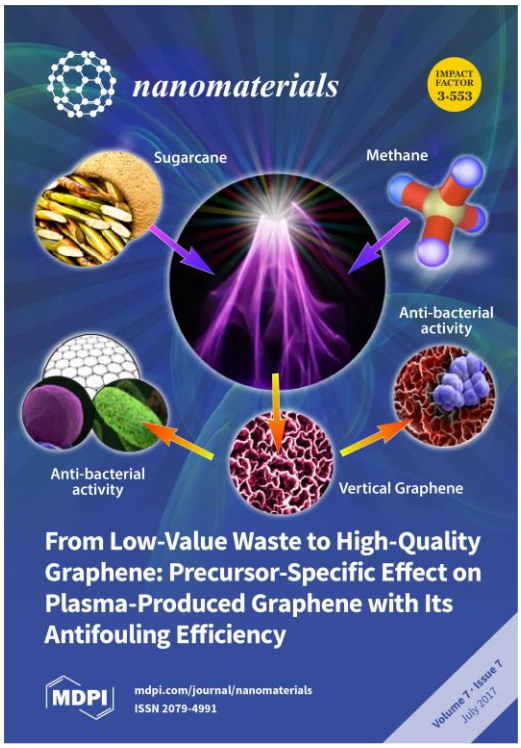
The attachment includes a ppt where Paul problem is assessed and studied by the group. At first, we established all the fundamentals criteria to determine if a specific Journal could satisfy Paul's team publication needs.

Then, we focused on these criteria and we built a "staircase" towards the solution of the problem.

At last, the results of this analysis are provided by means of a Journals list with their bibliometric indicators.

Team 3 [reds]

Value of a journal



The value of a magazine depends on its quality and its ethics. Quality is represented by the following elements:

- peer review process (most objective double-blind review on evaluation), impact factor, bibliometric indicators, editorial members, acceptance rate, publisher reputation, indexing;
- scientific rigour in the sense of the following aspects: research purpose, methods, analysis, tables, figures and citations.

The ethical aspect is no further made explicit.
Openness in terms of open access is a useful feature for increasing the visibility and citability of a research result.

Evaluation criteria

The following are identified as criteria:

- type of peer-review
- indexing
- editorial board members
- reputation of the publisher
- acceptance rate
- open access (as an additional criterion)
- scientific rigour.

Searching strategy

The following strategies could be adopted to find journals to publish in:

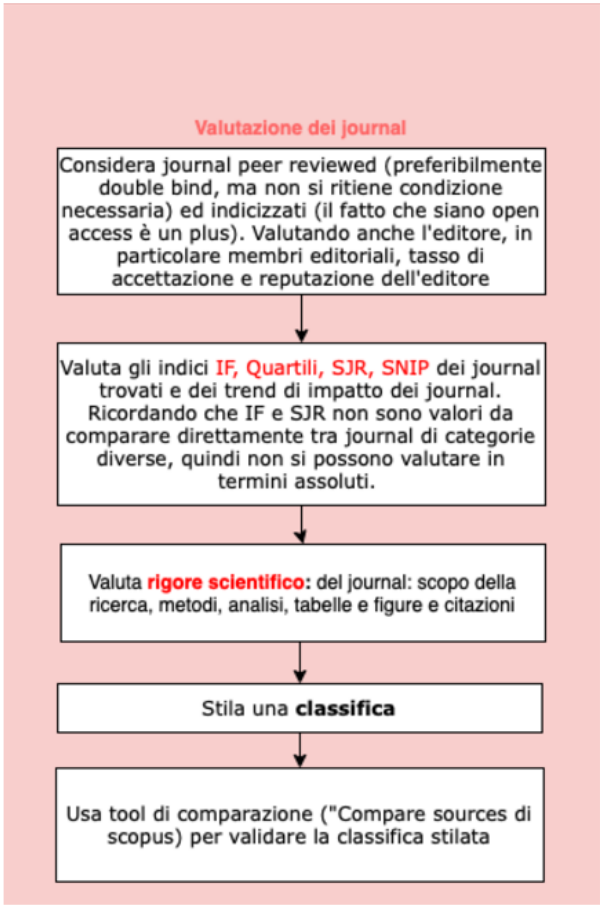
- search multidisciplinary bibliographic databases to find the journals in which the leading authors of that specific subject area publish;
- find journals in which similar articles have been published and follow their network of relationships (within a publishing platform or via bibliographic databases);
- use the publishers' 'journal selector tools' (search among the journals of that publisher). For instance:
    - https://journalfinder.elsevier.com
    - https://journalsuggester.springer.com
    - https://journalfinder.wiley.com/search?type=match
    - https://publication-recommender.ieee.org/home

- use tools that search across abstracts or keywords:
    - https://www.journalguide.com
    - https://www.edanz.com/journal-selector

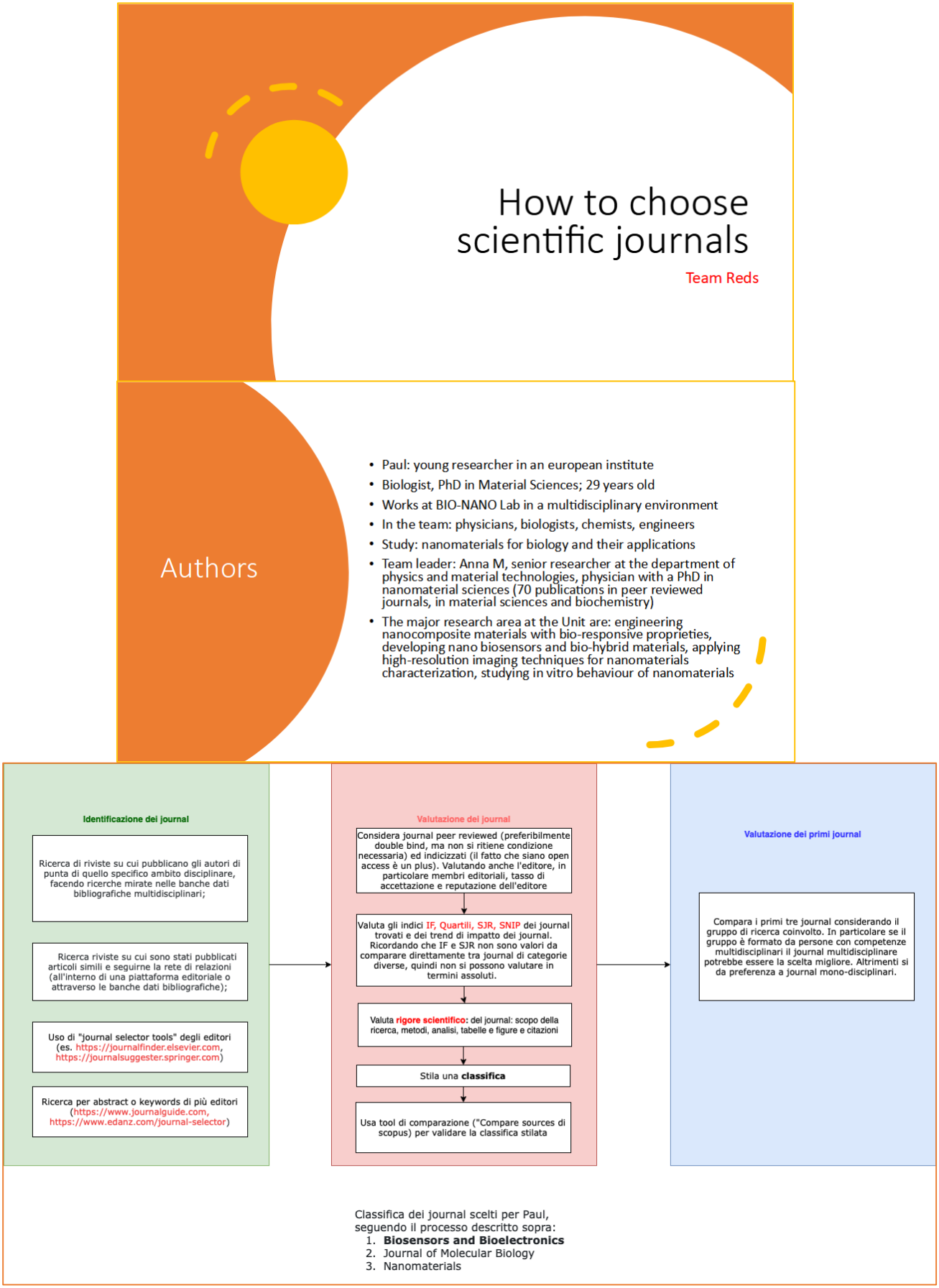
Evaluation strategy

The choice of the type of magazine to publish in depends on the topic and the slant you want to give a certain result. It is made by applying the steps below and illustrated in the diagram:

1. The first stage of the selection should consider quality criteria and scientific rigour
2. The second phase uses bibliometric indicators (IF, Quartiles, SNIP, SJR) and their trends
3. The list of selected journals is validated using a journal comparison tool such as Scopus' 'Compare Sources'.

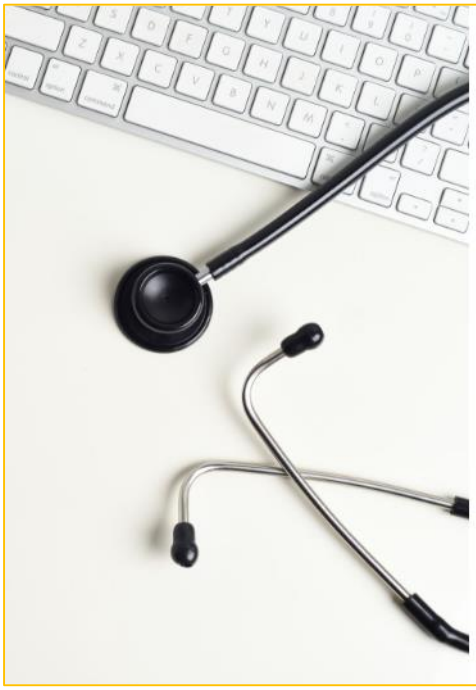


Final presentation



Proposal

- The group is writing a project proposal focused on fabrication of nanostructured polymeric materials with antimicrobial activity, specifically biopolymer nanofibers and nanocomposites, and on their application for infection disease management in healthcare.
- The proposal should be submitted in an European Commission funding call. If approved, the project plan will foreseen the publication of 4 articles in two years.



Task

Paul is tasked with identifying a list of scientific international journals for the dissemination of the scientific results. The selected list must be compliant with disciplinary topics of the research Unit, funding call requirements and researchers needs. The list should include only high value academic journals.

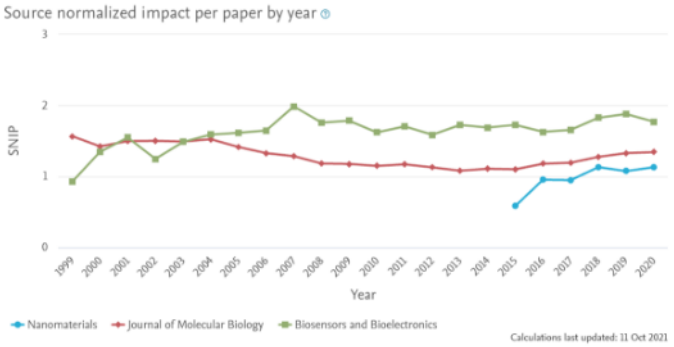
Journals

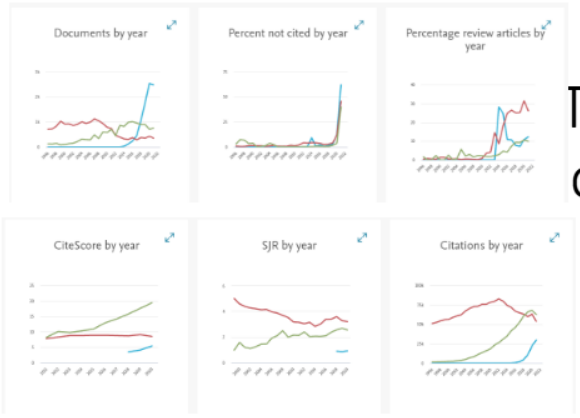
What size is it?

Nanomaterials	from the area of nanomaterials
Journal of Molecular Biology	from the area of molecular biology
Biosensors and Bioelectronics	interdisciplinary journal from the overlapped areas

SNIP

SNIP is a field normalised assessment of journal impact. SNIP scores are the ratio of a source's average citation count and 'citation potential'. Citation potential is measured as the number of citations that a journal would be expected to receive for its subject field. SNIP allows for direct comparison between fields of research with different publication and citation practices.





Three journals chosen data comparison with Scopus

Journal interdisciplinare di biosensori o microbiologia:
Biosensors and Bioelectronics, IF 10.257, SJR 2.68, Q1, SNIP 187.9%

Ambito	Quartile	Rank	Percentile
Biomedical Engineering	Q1	7/225	97%
Biophysics	Q1	3/129	98%
Biotechnology	Q1	8/275	97%
Electrochemistry	Q1	1/37	98%

Area disciplinare di biologia molecolare:
Journal of Molecular Biology, IF 4.76, SJR 3.268, Q1, SNIP 132.8%

Ambito	Quartile	Rank	Percentile
Biophysics	Q1	8/129	94%
Molecular Biology	Q1	51/381	86%
Structural Biology	Q1	7/48	86%

Area disciplinare di nanomateriali:
Nanomaterials, IF 4.446, SJR 0.858, Q1, SNIP 107.4%

Ambito	Quartile	Rank	Percentile
General Chemical Engineering	Q1	73/281	74%
General Materials Science	Q1	147/460	68%

Learning process

1 - Value of a scientific journal

Peer review process (more objective double-blind review on evaluation), impact factor, bibliometrics (important for quality but not decisive for a certain field), editorial members, acceptance rate, publisher reputation, indexing.

The choice of the type of journal depends on the topic and the focus you want to give to a certain result (emphasising different aspects and depending on the collaborating figures, such

as the head of the research group). An open access journal may be preferable to gain more visibility for one's results (citations, making oneself known...).

Another consideration may be the scientific rigour of the journal: research purpose, methods, analysis, tables, figures and citations. Or even ethical aspects concerning the journal. (Interesting article https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6913840/)

2 - Tool to locate the journal

Programmes that help you select the journal:

- https://rushu.libguides.com/c.php?g=1075750&p=7835702: journal selection tool list
- Jane: find journal by title and abstract in Medline (national library of medicine database). Search also by author (useful for collaborations) and articles (citations)
- Think.Check.Submit Checklist: journal credentials
- Be iNFORMEd: Checklist/Evaluating Journals: how many articles were cited, published, costs, credibility of the journal, peer review process (standards, timing...)
- Publishing Your Work: Assessing Journal Legitimacy: open access journals for nursing publications
- Directory of Open Access Journals (DOAJ): open access, search information by subject area
- Edanz Journal Advisor, Elsevier Journal Finder

To fill our gaps: use a search tool among those proposed (on a certain subject, if open access...), obtain information on the journal, publishers

3 - What size it is?

- Nanomaterials subject area:

Nanomaterials, IF 4.446, SJR 0.858, Q1, SNIP 107.4%

Domain	Quartile	Rank	Percentile
General Chemical Engineering	Q2	73/281	74%
General Materials Science	Q2	147/460	68%

- Molecular Biology subject area:

Journal of Molecular Biology, IF 4.76, SJR 3.268, Q1, SNIP 132.8%

Domain	Quartile	Rank	Percentile
Biophysics	Q1	8/129	94%
Molecular Biology	Q1	51/381	86%
Structural Biology	Q1	7/48	86%

- interdisciplinary journal of Biosensors or Microbiology:

Biosensors and Bioelectronics, IF 10.257, SJR 2.68, Q1, SNIP 187.9%

Domain	Quartile	Rank	Percentile
Biomedical Engineering	Q1	7/225	97%
Biophysics	Q1	3/129	98%
Biotechnology	Q1	8/275	97%
Electrochemistry	Q1	1/37	98%

From: https://www.scopus.com/source/eval.uri ,https://academic-accelerator.com/ , https://www.journalindicators.com/indicators

Limitations in the huge of journals that are in a specific topic, we should see a quartile and also the SNIP indicator.

Source-normalized Impact per Paper (SNIP) is a field normalised assessment of journal impact. SNIP scores are the ratio of a source' save rage citation count and 'citation potential'. Citation potential is measured as the number of citations that a journal would be expected to receive for its subject field. Essentially, the longer the reference list of a citing publication, the lower the value of a citation originating from that publication. SNIP therefore allows for direct comparison between fields of research with different publication and citation practices.

The Scopus database is the source of data used to calculate SNIP scores.

SNIP is calculated as the number of citations given in the present year to publications in the past three years divided by the total number of publications in the past three years. A journal with a SNIP of 1.0 has the median (not mean) number of citations for journals in that field.

SNIP only considers for peer reviewed articles, conference papers and reviews.

Another kind of evaluation is the trends of these indicators (in particular for the IF and Quartile), for the "Biosensors and Bioelectronics" as a multidisciplinary journal, there is a growing trend, the opposite appears for "Journal of Molecular Biology".

4 - How to sort these journals?

1. Biosensors and Bioelectronics
2. Journal of Molecular Biology
3. Nanomaterials

The used criteria have been the use of the quartile, SNIP and IF over the time for each journal and related to the research field.

If the journal is made up of researchers from different disciplines, I think it is more appropriate to choose a multidisciplinary journal, otherwise itis better to choose the journal of the sector in question and the research more vertically than that sector.

Considering that the major research area at the Paul's Unit are engineering nanocomposite materials with bio-responsive proprieties, developing nano biosensors and bio-hybrid materials, applying high-resolution imaging techniques for nanomaterials characterization, studying in vitro behaviour of nanomaterials, we select the multidisciplinary journal of Biosensor and Bioelectronics. This journal has the highest quartile and a good rank in different areas.

5 - Identify journals e Compare sources

Identification of journals starting from a topic:

- Journals in which the leading authors of that specific subject area publish, making targeted searches in multidisciplinary bibliographic databases;
- journals in which similar articles have been published and follow their network of relationships (within a publishing platform or via bibliographic databases);
- publishers' 'journal selector tools' (search among that publisher's journals):
    - https://journalfinder.elsevier.com,
    - https://journalsuggester.springer.com,
    - https://journalfinder.wiley.com/search?type=match,
    - https://publication-recommender.ieee.org/home);
- search by abstracts or keywords of several publishers:
    - https://www.journalguide.com
    - https://www.edanz.com/journal-selector

The Scopus 'Compare sources' tool allows you to compare up to 10 journals at the same time based also on qualitative characteristics and metrics (e.g. CiteScore, SJR, SNIP, Citations, Documents, %Not cited, % Reviews).

- SJR (SCImago Journal Rank): In addition to the number of citations, this metric considers the prestige/quality of the journal cited (iterative process)
- SNIP (Source Normalized Impact per Paper): number of citations weighted by the total number of citations for that subject area.
- CiteScore metrics: number of citations received in papers published up to three years weighted by the number of papers published in 3 years. Includes all types of papers, but

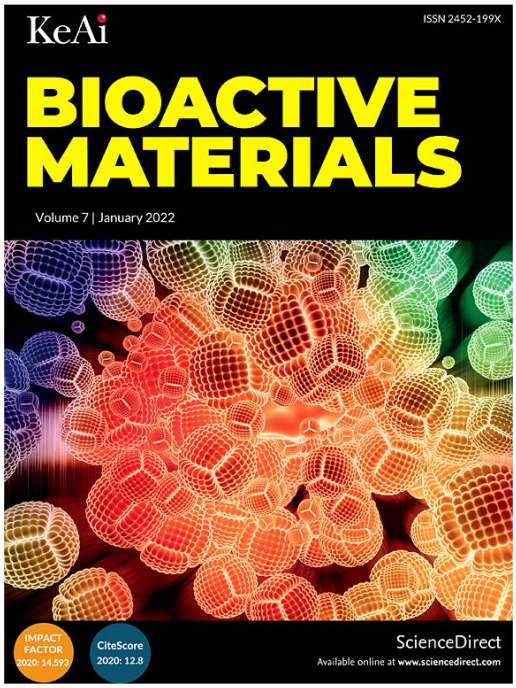
does not take into account the quality of cited journals and is not normalised for that field of research.

- Documents, %Not cited, % Reviews take into account citations/publications in the last year.

Source: https://libguides.library.cityu.edu.hk/researchimpact/scopus-compare-journal-tool

Team 4 [oranges]

Value of a journal



The value of a journal depends on its relevance, the quality of the editorial process and its reputation.

Relevance includes relevance to the research topic, interdisciplinary focus and the characteristics of the publishing authors.

Quality of the process is related to peer-review characteristics, open-access publication options, editorial board composition, and editorial quality in terms of comprehension and clarity.

Reputation is related to the journal's performance in bibliometric terms, its indexing levels, and acceptance rate.

Evaluation criteria

The values and respective valuation criteria adopted are as follows:

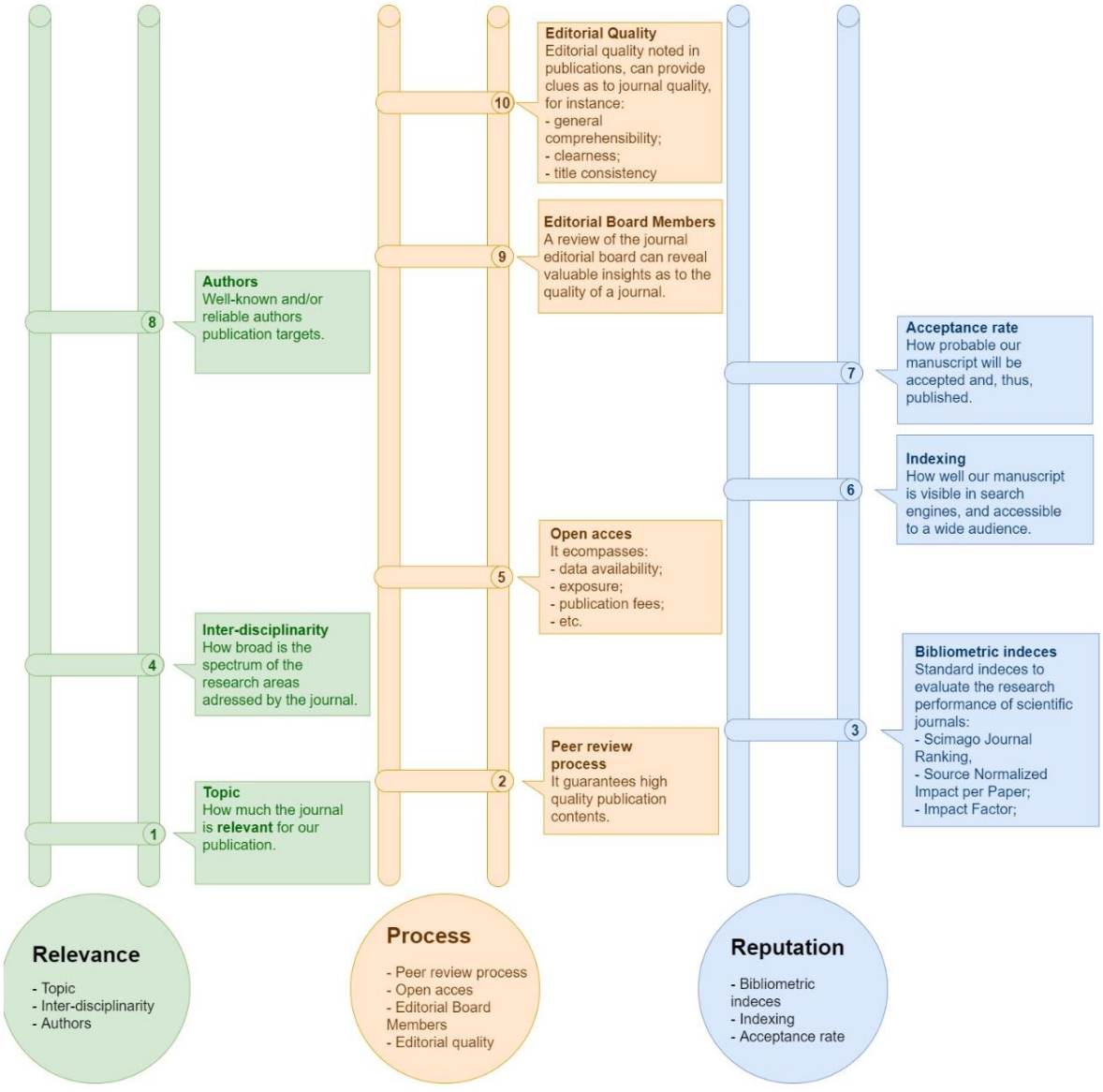
RELEVANCE	QUALITY OF THE PROCESS	REPUTATION
• relevance to the topic • broadness of the subject area • notoriety of the authors • reliability of the authors	• type of peer-review • open access (dissemination, visibility, article processing charge) • composition of the editorial board • editorial process (comprehension, clarity, consistency of title)	• bibliometric indexes (Ranking in quantiles, SJR, SNIP, IF) • indexing in search engines • acceptance rate

Evaluation strategy

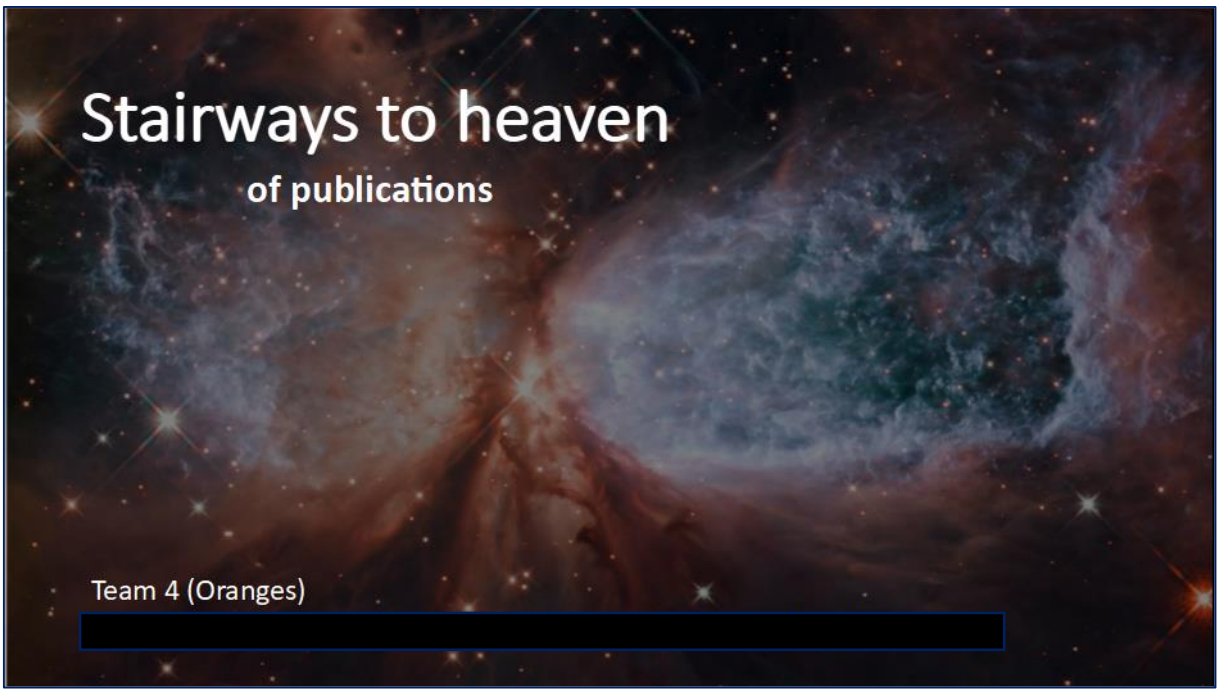
The choice of the type of journal to publish in is made by applying the steps below and illustrated in the diagram:

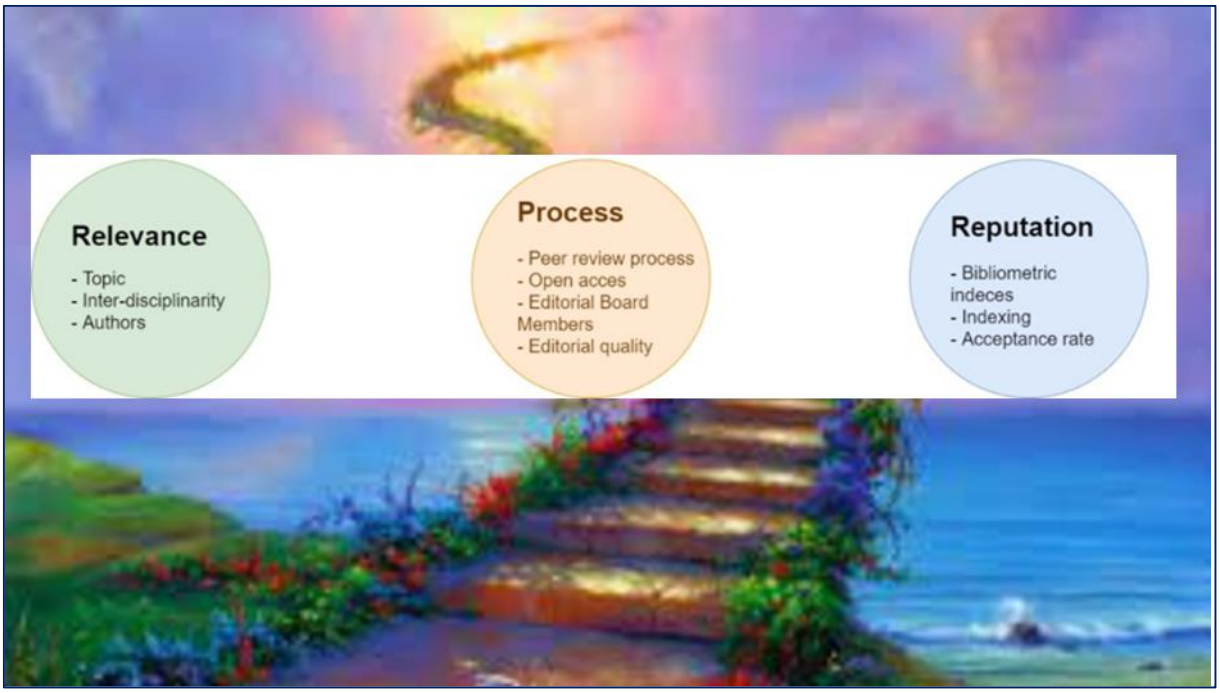
1. identification of journals relevant to the topic
2. evaluation of the peer-review process adopted
3. journal impact analysis based on ranking (Q1)

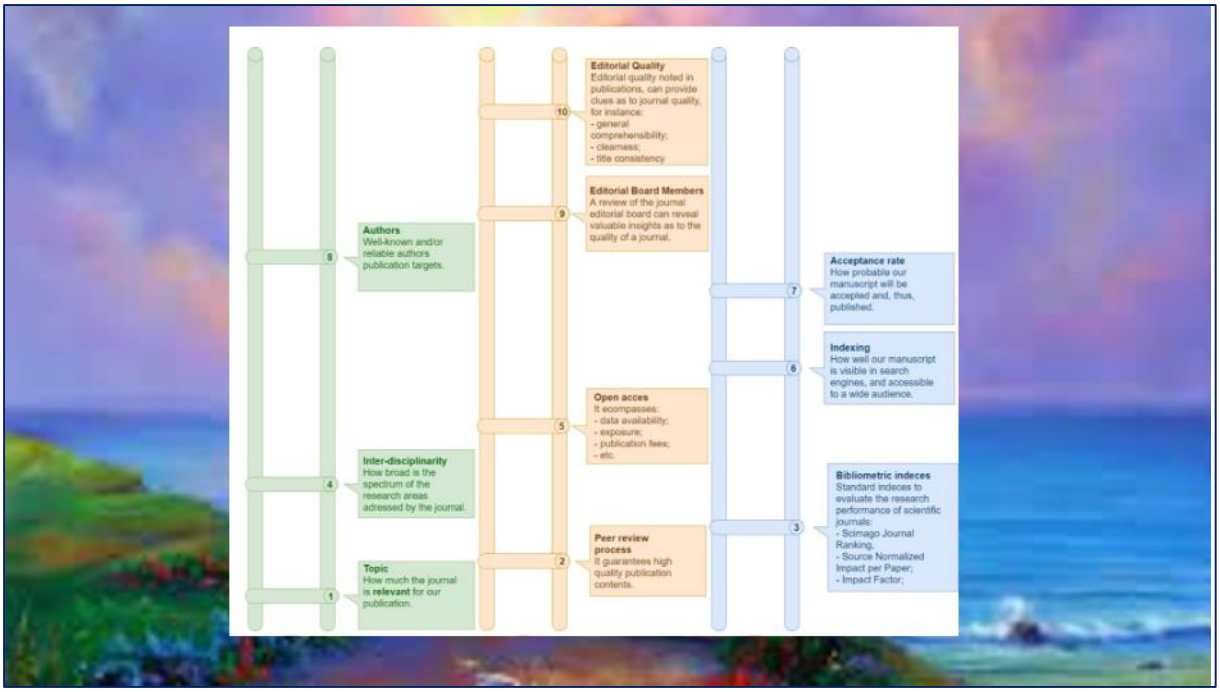
4. analysis of the journal's performance based on the following indicators: SJR, IF, SNIP
5. analysis of the disciplinary approach adopted
6. evaluation of Open Access options
7. overall assessment of the additional qualitative parameters identified (difficulties in applying certain criteria)



Final presentation





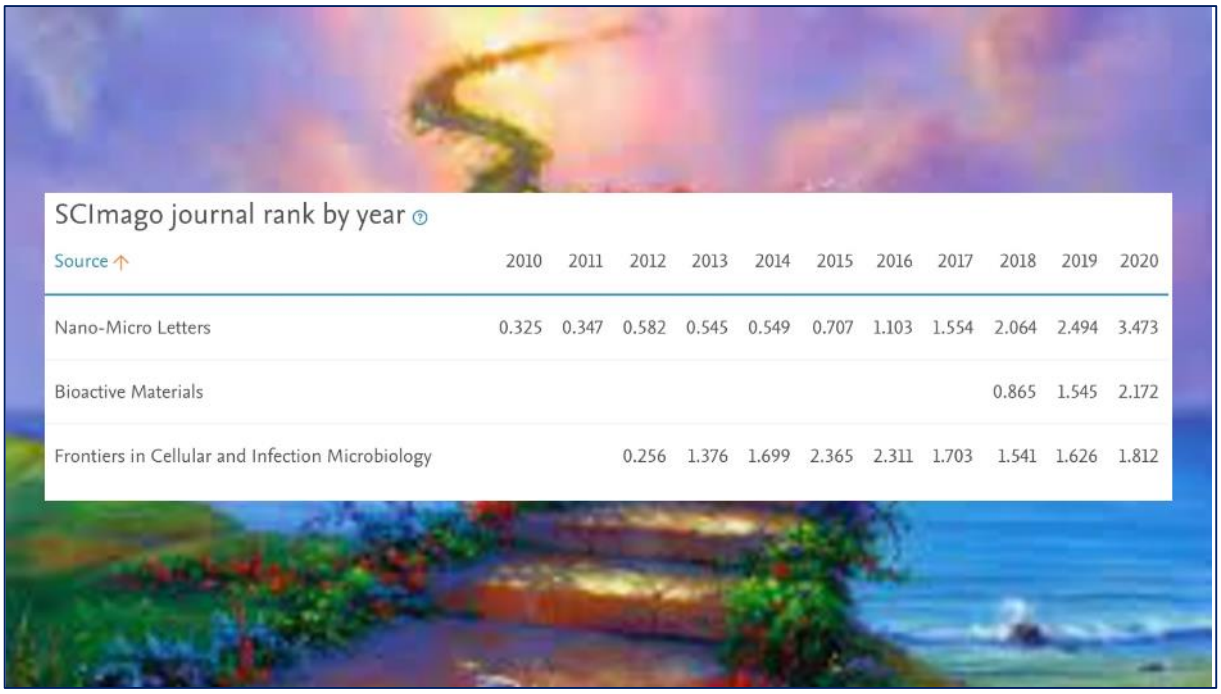


Nano-micro Letters (material science – nanoscience and nanotech) che è una rivista open access Q1 con impac factor del 2019 pari a 12.3. Ad una prima analisi ci sembra una rivista ad ampio spettro che copre diversi ambit potenzialmente affini alle esigenze di Paul

https://www.scimagojr.com/journalrank.php?category=2509&area=2500&type=j&openaccess=true

Frontiers in cellular and infection microbiology (medicine – infection diseases) anch'essa open access con impac factor 2019 pari a 4.1. E' una rivista Q1 nel suo ambito e ci sembra più settoriale e quindi più vicina al tipo di rivist ricercato da Paul https://www.scimagojr.com/journalrank.php?category=2725&type=j&openaccess=true

Bioactive materials: (Biochemistry genetics and molecular biology, biotechnology) é una rivista Q1 con impac factor 2019 pari a 9.2 e ci sembra essere la più vicina alle necessità di Paul per quanto riguada il suo topic di interesse



SCImago journal rank by year

Source	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Nano-Micro Letters	0.325	0.347	0.582	0.545	0.549	0.707	1.103	1.554	2.064	2.494	3.473
Bioactive Materials									0.865	1.545	2.172
Frontiers in Cellular and Infection Microbiology			0.256	1.376	1.699	2.365	2.311	1.703	1.541	1.626	1.812

La nostra propensione per Bioactive Materials si basa su un buon bilanciamento dei parametri sopracitati:

- Affinità al topic di interesse
- Soggetta a processo peer review
- Contenuta nel primo quartile
- Ben rappresentata dagli indici bibliometrici (Q1, IF 9.2, SJR =1.54, SNIP= 2.9)
- Interdisciplinare
- Open access
- Buona visibilità nonostante la giovane età e aree di interesse mediamente di tendenza.

Altri parametri da noi ritenuti importanti e presenti nella mappa non sono stati valutati in quanto difficilmente reperibili (e.g. acceptance rate).

Learning process

1 - Value of a scientific journal

We have highlighted three factors that in our opinion can identify the value of a scientific journal:

- Impact factor: universally used to assess the quality of a journal based on the average number of citations per year of articles published in it.

- Relevance to the topic of interest: more specific assessment based on the type of topic covered by the journal and the proximity to the work to be published.
- Publication of a reference author: based on the journal where a particular author, considered 'strong' on a topic, publishes.

In our opinion, the open science approach can have a positive impact on the perceived value of a given scientific journal due to the likely increase in the readership of published articles and consequently the journal's impact factor.
Additional factors that emerged from the discussion include the distinction between single-blind and double-blind journals. The latter, in our opinion, lead to an increase in the value of a journal as they promote impartiality in the judgement of the actual value of published articles.

2 - Evaluation of a journal to publish in

Several insights emerged from our discussion, which we report below.

With regard to interdisciplinarity, it is certainly a factor that influences the choice of scientific journal to publish in as it allows the team wishing to publish to have a wide audience interested in the different aspects that are covered in the article being submitted. From our discussion, different opinions emerged as to what extent interdisciplinarity can be a factor that increases/decreases the quality of the journal. According to some of us, interdisciplinarity does not detract from the quality per se, while for others it is an added value insofar as, with regard to areas such as basic biomedical research, it enables theoretical research to be brought closer to areas that enable its effective application and translation. Examples that emerged during the discussion of interdisciplinary journals are Nature, Science and Frontiers.

After a careful reading of the Manifesto as a group, it emerges in our opinion that the methods generally used for quality assessment are standardised unevenly across fields. Evidence of this is the great difference in indices such as the impact factor or the H index between researchers in the sciences and the humanities and even within the same field. In our opinion, a possibly more effective approach would be to standardise within each specific field, considering the peculiarities of each field and the differences in data collection, processing and representation. It is also clear that the qualitative and quantitative evaluation of a researcher's work must go hand in hand in order to ensure an overall all-round judgement.

The research presented in the Problem seems to belong to areas such as bioengineering, materials and nanomaterial sciences and biomedical sciences. If we had to summarise it in keywords we would choose: applied chemistry, polymer chemistry, bioengineering applied to the interaction between organic and inorganic components.

From the list of evaluation elements reported, we agreed that among them, the ones that in our opinion should most influence the choice of journal to publish in are:

- **The peer review process:** considered by all to be fundamental in ensuring a higher quality of the submitted paper. Different types of peer review emerged from the discussion: single blind, double blind, open peer review and collaborative peer review. Of these, most agreed that double blind is the most impartial type of review, although the open peer review method may allow for greater transparency of the review process.

- **Impact factor:** certainly the most widely used and readily available. However, being based exclusively on a quantitative measurement, it can lead to problems in assessing the real quality of the work, depending above all on the scope of the research.
- **Indexing:** In our opinion, another important element is the visibility that a journal can guarantee to researchers who decide to publish in it. Greater visibility allows for greater dissemination of knowledge and a more effective and comprehensive critical analysis.

3 - What size it is?

Based on the suggested topics, we selected 3 journals:

- Nano-micro Letters (material science – nanoscience and nanotech) which is an open access Q1 journal with a 2019 impact factor of12.3. On initial analysis, it seems to us to be a wide-ranging journal covering several areas potentially related to Paul's needs. https://www.scimagojr.com/journalrank.php?category=2509&area=2500&type=j&openaccess=true
- Frontiers in cellular and infection microbiology (medicine – infection diseases) also open access with a 2019 impact factor of4.1. It is a Q1 journal in its field and seems to us to be more sector-specific and therefore closer to the type of journal Paul is looking for.
  https://www.scimagojr.com/journalrank.php?category=2725&type=j&openaccess=true
- Bioactive materials: (Biochemistry genetics and molecular biology, biotechnology) is a Q1 journal with a 2019 impact factor of 9.2 and seems to us to be closest to Paul's needs in terms of his topic of interest.
  https://www.scimagojr.com/journalrank.php?area=1300&openaccess=true&type=j&category=1305

A comparison of the impact factors shows that, despite the fact that all three are recognised in the first quartile (Q1), the journal Frontiers has a lower IF and this seems predictable given the interest in a more niche and non-trendy field (at least until early 2019). In contrast, Bioactive materials is a young journal with a high IF, probably due to the publication of content on a highly interesting and trendy topic, which is also demonstrated by the high IF growth year on year. In addition to this, Bioactive materials is also a multidisciplinary journal and this increases its attractiveness in our opinion.

We also compared the journals we selected using the Scimago Journal Rank and, as visible in the table below, the ranking trend is slightly different to that of the impact factor. Being an index that evaluates citation prestige as well as number, we expected Bioactive materials to have a low SJR given its young age and visibility in the eyes of an initially small audience. However, the fast growth on this index confirms our idea of a journal with high attractiveness and interest.

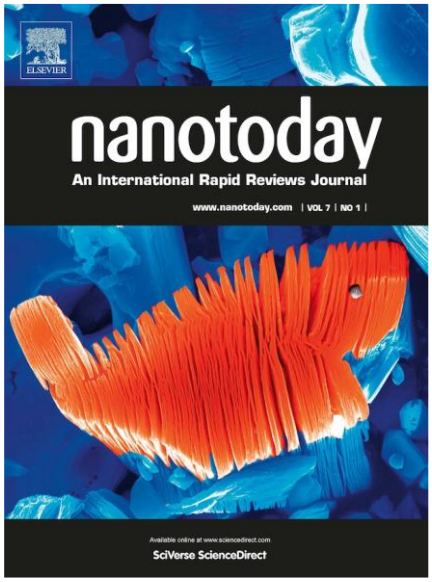
SCImago journal rank by year

Source	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Nano-Micro Letters	0.325	0.347	0.582	0.545	0.549	0.707	1.103	1.554	2.064	2.494	3.473
Bioactive Materials									0.865	1.545	2.172
Frontiers in Cellular and Infection Microbiology			0.256	1.376	1.699	2.365	2.311	1.703	1.541	1.626	1.812

Using the same method, we also compared the three journals chosen on the basis of Source Normalized Impact for publication (SNIP): Bioactive materials in this case is the one with the highest SNIP index (2.9) followed by Nano-Micro Letters (2.1) and Frontiers (1.5). This index, also considering the prestige of citations from different fields and thus potentially the translatability and applicability of a study, is in line with the trend of the impact factor and reinforces our choice of **Bioactive materials** as the most suitable journal among others.

Team 5 [yellowsuns]

Value of a journal



The value of a journal depends on qualitative and quantitative elements.

The qualitative elements are identified in the peer-review process, management time of the publication process and open access publication.

The quantitative elements are identified in the indicators of performance and citation impact.

Evaluation criteria

The evaluation criteria adopted by our Team are based on the use of the following indicators: Scimago Journal Rank and SNIP.

Searching strategy

To identify journals for publication, we suggest using the semantic keyword search of the 'selector tool' of Edanz, a publishing services company for researchers.

Evaluation strategy

The evaluation strategy exploits the potential of the journal comparison tool provided by the Scopus database.

Final presentation

High values and indicators

Quantitative metrics

IF → doesn't allow a comparison between journals belonging to different disciplines. Paul and his team need a multidisciplinary tool.

SNIP → ratio between the average number of citations of a source and the 'citation potential'. Citation potential is measured as the number of citations a journal should receive for its subject area, allowing us to compare research fields with different publication and citation practices.

Qualitative metrics

SRJ → measure of the scientific influence of journals that takes into account both the number of citations received by a journal and the importance or prestige of the journals from which those citations come,

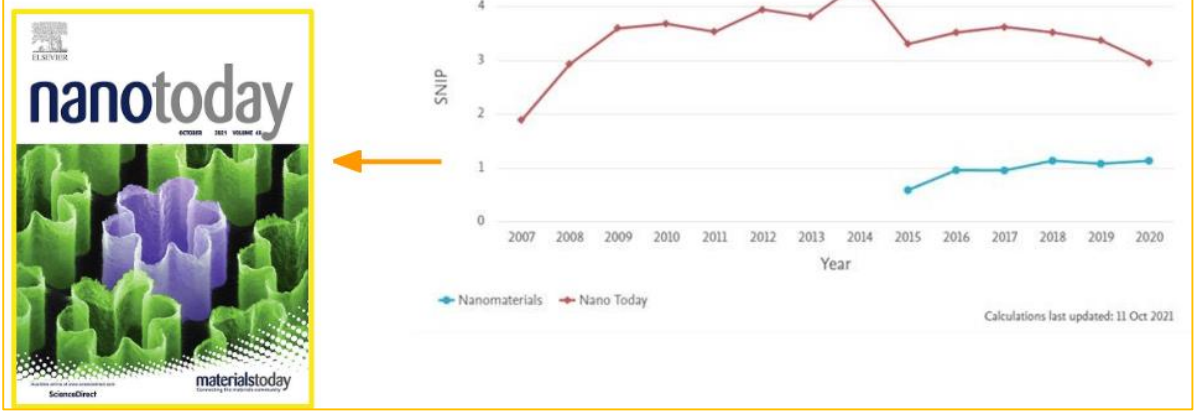
Selecting a journal

- Avoid time consuming process in multidisciplinar databases confronting authors' prestige and articles relations ✗
- Journals selector tools prevent a global perspective ✗
- Use of semantic research on keywords for a range of editors ✓

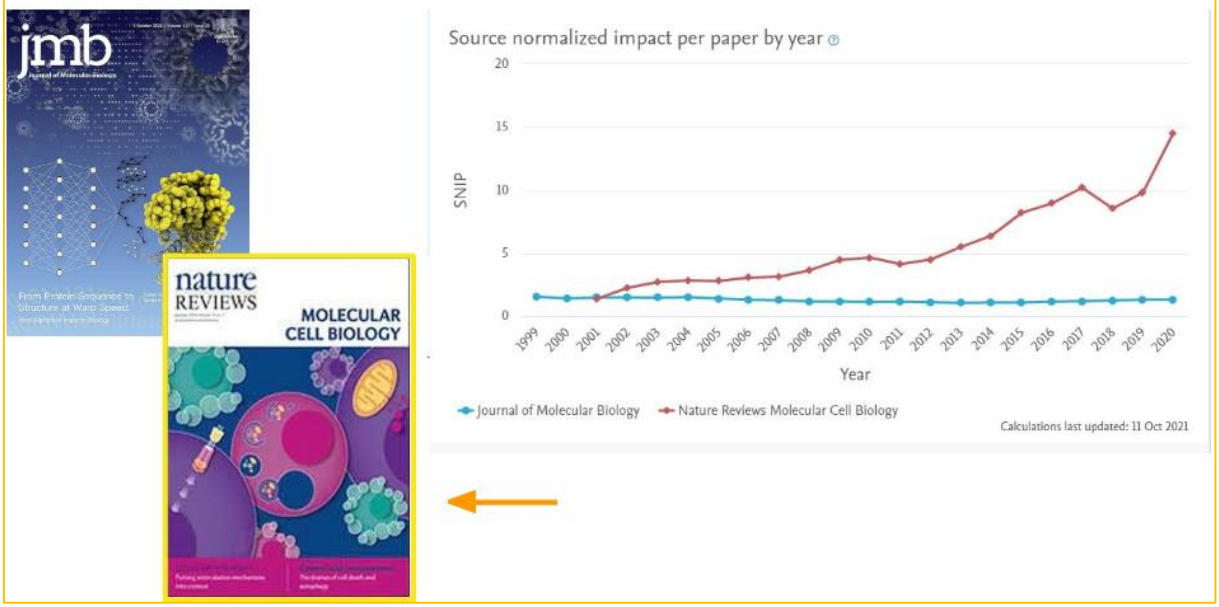
https://www.edanz.com/journal-selector-tool

Journal Nanomaterials area

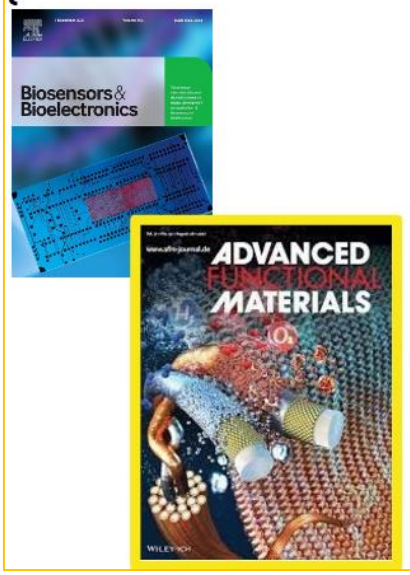
s

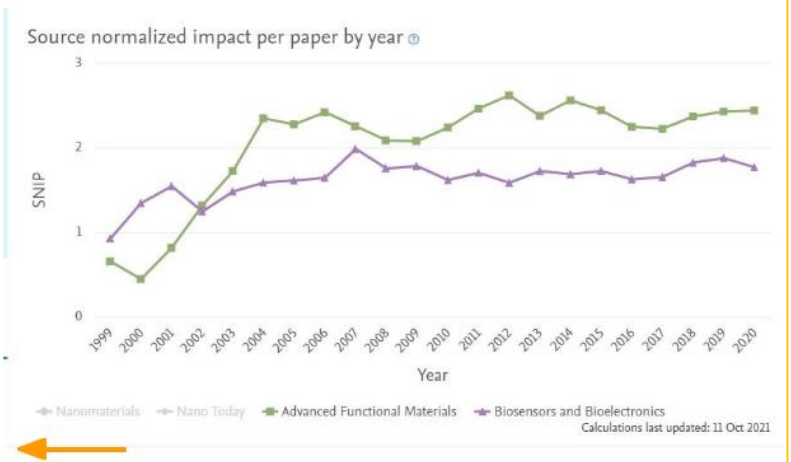


Journal Molecular biology area



Journal Multidisciplinar

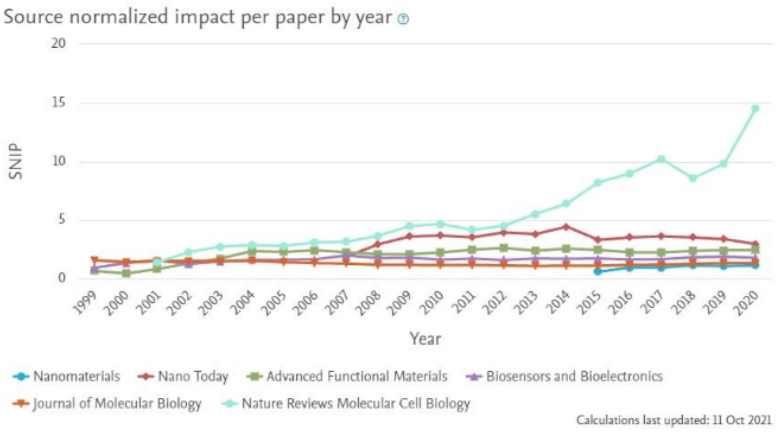




Journal Overall comparison and final conclusions

→ **"Nature Reviews Molecular Cell Biology"** first best, along our strategy

Considering that the journal is not full open access, we also indicate **"Nano Today"** as possible choiche



Learning process

1 - The value of matter

We provide our answer to the exploratory questions in the following:

1. What defines the value of a scientific journal?

It is not easy to define the value of a scientific journal in an absolute sense as this evaluation often varies according to the field of study. So, although there are bibliometric indexes and systems for categorizing journals, quality assessment should follow a dual approach:

- quantitative, in numerical terms of scientific impact
- qualitative, with respect to the judgment of peer-reviews or the publisher reputation.

2. How can you evaluate a scientific journal?

The quantitative approach is based on the evaluation of bibliometric indices. Among these the best known is the impact factor (IF) which represents the number of citations received in the current year for articles published in the previous two years divided by the total number of articles published in the same two years. In addition, there are the H-Index and the Citation Impact which respectively indicate the influence of the author and the article and the Altmetrics which represents the influence of the magazine / article / author outside the world of formal publishing.
As the number of citations varies from field to field, it is necessary to normalize the indicators and the best method uses percentiles; each article is weighted on the basis of the percentile to which it belongs in the distribution of citations of the field to which it applies.
The qualitative approach is based on the peer examination. It is a presentation by the researcher of his own work to others improving the ability to critically evaluate the work done and allows to discuss: i) methodological options, ii) results of the analyses.

One parameter for assessing the quality of a journal is to check its membership of associations that support publishers and guide them in good publication practices in order to encourage more ethical and quality publication, such as the Committee on Publication Ethics (COPE).
It is also good to check that the editorial board include well-known and renowned academics, and that the journal does not promise too short publication time.

3. Can publication aim, research assessment, open science influence the judgment? How?

All these parameters can influence the evaluation, in fact the aim of publication should be compatible with the topics covered in our article and it would be better if the journal had already published papers related to our research field, moreover the level of the journal must be appropriate to our paper.
As mentioned above, the evaluation of research should not take too long and the acceptance rate of a paper should not be too high as this would indicate a low selectivity of the quality of the work.
Finally, open access can also influence a journal's judgement. It is essential that journals using this method of publication use quality control systems for the work submitted to them, otherwise there is a risk that poor quality work will be published.

4. Which other factors can or should be taken into account?

It might be useful to consider the circulation of the magazine and the channels it favours, as well as copyright rules.

2 - Analysis of the problem

Paul is a biologist with a PhD in materials science.

His interdisciplinary team includes physicists, biologists, chemists and engineers on the study of nanomaterials for biology and their applications in various fields:

- engineering nanocomposites materials with bio-responsive properties
- developing nano biosensors and bio-hybrid materials
- applying high-resolution imaging techniques for nanomaterials characterization
- studying in vitro behaviour of nanomaterials.

His team is writing a project proposal for a European Commission funding call.

Title: “Fabrication of nanostructure with antimicrobial activity (biopolymer nanofibers and nanocomposites) and their application for infection disease management in healthcare”

Conditions:

- support the topics of the research team
- foresee the requirements of the call for funding
- Open access
- High value

3 - Selection of Journals

Strategy 1: identify the journals in which the leading authors of that specific subject area publish, by making targeted searches in multidisciplinary bibliographic databases. We believe this strategy is applicable as soon as one is familiar with the field and therefore knows the leading authors. In this case, referring to a different field is not the most immediate strategy.

Strategy 2: identify journals in which similar articles have been published and follow their network of relationships (within a publishing platform or via bibliographic databases). Again, this strategy is only successful if one refers to one's own research field.

Strategy 3: use publishers' so-called 'journal selector tools': search tools made available to identify the most relevant scientific journals in which to submit, only among those published by the publisher. Examples:

- https://journalfinder.elsevier.com
- https://journalsuggester.springer.com
- https://journalfinder.wiley.com/search?type=match
- https://publication-recommender.ieee.org/home

This strategy does not allow a global view, limiting itself to selecting the chosen publisher's journals.

Strategy 4: use similar tools that allow semantic searching by abstracts or keywords and that do not limit themselves to querying the set of publications of one publisher. Examples:

- https://www.journalguide.com
- https://www.edanz.com/journal-selector

We decided to use this strategy because it allows us to access and compare journals of different publishers from a subject area. In particular, we used Edanz's general keyword search: https://www.edanz.com/journal-selector

Par. 4 - What size is it?

1. one from the area of nanomaterials

   Nanomaterials
   https://www.mdpi.com/journal/nanomaterials

2. one from the area of molecular biology

   Journal of Molecular Biology
   https://www.journals.elsevier.com/journal-of-molecular-biology

3. the latest one should be an interdisciplinary journal from the overlapped areas, i.e. biosensors or applied microbiology.

   Biosensors and Bioelectronics
   https://www.journals.elsevier.com/biosensors-and-bioelectronics

We used the 2020 IF, SJR etc. data as the 2019 IF data were not available.

Nanomaterials

- IF 5.076
- SJR 0.919
- SNIP 1.129

Journal of Molecular Biology

- IF 5.469
- SJR 3.189
- SNIP 1.342

Biosensors and Bioelectronics

- IF 10.618
- SJR 2.546
- SNIP 1.771

It can be seen that **IF** is not an absolute metric. In fact, it must be relativised according to the field of the selected journal (it is a relative, not an absolute impact).

Consequently, the division of IF values into quartiles is necessary to try to solve the problem of non-homogeneity of IF weight across disciplines. The positioning of the journal within the quartile will depend on the position of its IF in the distribution of IFs in a given subject area.
The **SJR** indicator considers both the number of citations received by a journal and the importance or prestige of the journals from which these citations originate. Furthermore, it does not take self-citations into account. If we compare the IF of the first two journals, we see that there is not a strong difference and that both are in the Q1 band within the subject areas of reference. However, the prestige of the Journal of Molecular Biology is significantly higher than that of Nanomaterials and also of the interdisciplinary journal Biosensors and Bioelectronics, although the latter has a higher IF.

The **SNIP** measures the impact of citations, normalising it according to the relevant discipline, allowing a comparison of journals in different subject areas. In particular, it compares the citations of each journal per publication with the citation potential of its field, defined as the set of publications citing that journal. SNIP, therefore, allows the direct comparison of journals in different subject fields, as the value of a single citation is higher for journals in fields where citations are less likely and vice versa.

3.2.3 Extracts from Knowledge Base and Glossary

Knowledge Base: Repository in progress where learners and teachers can share any useful resource about all the issues concerning the problem and the related knowledge.

Collaborative Glossary: Glossary in progress where every participant can add entries about unknown concepts and, later on, complete related definition/description.

1. **Documents (extracts)**

Link:	https://sfdora.org/read/read-the-declaration-italiano/
Title:	**The Declaration on Research Assessment (DORA Declaration)**
Author or attribution:	American Society for Cell Biology
Description:	The Declaration on Research Assessment(DORA) recognizes the need to improve the ways in which researchers and the outputs of scholarly research are evaluated. The idea to write the declaration was developed in 2012during at the Annual Meeting of the American Society for Cell Biology in San Francisco. It has become a worldwide initiative covering all scholarly disciplines and all key stakeholders including funders, publishers, professional societies, institutions, and researchers.

Link:	https://tinyurl.com/23zvmbsc
Title:	**Open Science**
Author or attribution:	European Commission
Description:	The Open science policy and ambitions of the EU

Link:	http://altmetrics.org/manifesto/
Title:	**The Altmetrics manifesto**
Author or attribution:	J. Priem, D. Taraborelli, P. Groth, C. Neylon
Description:	Altmetrics is an emerging category of impact measurement premised upon the value of “alternative metrics,” or metrics based distinctly on the opportunities offered by the 21 century digital environment. Originally defined in contrast to the more established field of bibliometrics, altmetrics is fast becoming a fluid area of research and practice, in which various alternative and traditional measures of personal and scholarly impact can be explored and compared simultaneously.

Link:	https://www.councilscienceeditors.org/resource-library/editorial-policies/white-paper-on-publication-ethics/
Title:	**CSE's White Paper on Promoting Integrity in Scientific Journal Publications**
Author or attribution:	Council of Science Editors
Description:	CSE's White Paper on Promoting Integrity in Scientific Journal Publications was first published in 2006 and the full document was updated in 2009 and again in 2012. Beginning May 4, 2018, the paper will be updated on a rolling basis as new sections are added and/or existing sections are updated to reflect new information or best practices. Scope of the work is to serve as a basis for developing and improving effective practices to encourage everyone involved in the scholarly publishing process to take responsibility for promoting integrity in scientific publishing

Link:	https://doi.org/10.3205/zma001104
Title:	**Beyond the Impact Factor – What do alternative metrics have to offer?**
Author or attribution:	Fabry, G., & Fischer, M. R.
Description:	The article briefly explains what is altmetric and its relevance to scientific communication.

2. Tools, checklist and databases (extracts)

Resource:	**CWTS Journal Indicators**
Link:	https://www.journalindicators.com/indicators
Author or attribution:	Leiden University
Description:	It is a website where we can see some journals indicators like SNIP. There is also a download section for download a software to do that.

Resource:	**Think, Check, Submit**
Link:	https://thinkchecksubmit.org/journals/
Author or attribution:	Think. Check. Submit. is a cross-industry initiative led by representatives from DOAJ,INASP, ISSN, LIBER, OASPA, STM, and UKSG.
Description:	Checklist to verify if you are submitting your research to a trusted journal

Resource:	**DOAJ Directory of Open Access Journal**
Link:	https://doaj.org/
Author or attribution:	DOAJ
Description:	The DOAJ (Directory of Open Access Journals) was launched in 2003 with 300 open access journals. Today, this independent database contains over 16 500 peer-reviewed open access journals covering all areas of science, technology, medicine, social sciences, arts and humanities. Open access journals from all countries and in all languages are welcome

Resource:	Infographic, tool
Link:	https://www.editage.com/insights/7-common-types-of-academic-peer-review
Title:	**Seven common types of peer-review**
Author or attribution:	Editage insight
Description:	This infographic lists and briefly explains themost common types of peer review used today.

3.3 Results of final works assessment in Italy

As an example, the figure below shows how the final works produced by the four teams have been assessed using the rubric presented in section 3.1 of this document.

With reference to how to use this assessment tool, guidance and theoretical context are available in the "GUIDELINES FOR INSTRUCTORS. Strategies and methodologies to support instructors in the development of problem-based learning environments".

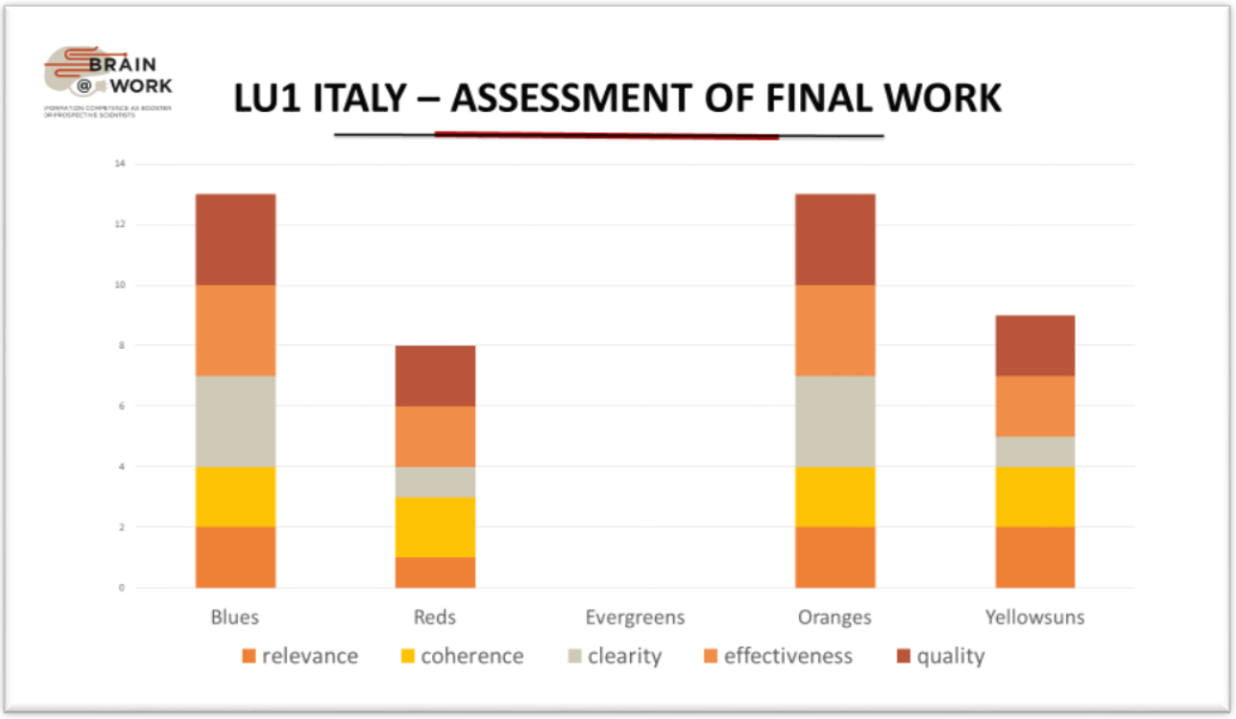


Fig. 11 Example of final works assessment

Chapter 4: Evaluation of the course by participants

Dear participant,

we kindly ask you to fill in this questionnaire, which allows us to evaluate the activity carried out and to improve future initiatives. The questionnaire consists of five sections (Contents, Teaching Methods, Organisation, Teachers, Results) and a free overall assessment.

We ask you to give a score from 1 (Not at all) to 4 (Very much) for each of the items indicated in each section.

Did you participate in the whole learning process?

☐ YES ☐ NO

If no

Could you tell us the reasons that prevented you from completing the course? Please indicate:

- critical aspects
- individual or work motivations;
- further observations and suggestions

If yes

1. **CONTENTS** - (Scale: Not at all, a little, quite a lot, very much)

The topics covered in the course were:

- Clear and comprehensive
- Interesting and engaging
- Coherent with your needs and expectations and appropriate to your level of knowledge
- Close to work reality and real problems

2. **TEACHING METHODS**

Do you think that the methods used were:

- Appropriate to the tasks and objectives
- Aimed at involving participants, comparing and exchanging experiences
- Helpful to the learning process
- Useful for the development of competences

3. ORGANISATIONAL ARRANGEMENTS

To what extent do you consider the following aspects of the course organisation satisfactory?

- Adequacy of duration, calendar of activities and timetables
- Management of teaching resources in relation to the scheduled time
- Completeness and timeliness of service information
- Effectiveness of the on-line learning environment

4. TEACHERS/FACILITATORS

Do you feel that the facilitators were:

- Prepared and competent
- Able to communicate in a clear and understandable way
- Able to arouse interest and involve participants
- Attentive to the needs and/or requests of the participants
- Able to manage and coordinate the group
- Able to offer food for thought
- Able to provide useful information for the professional life

5. RESULTS

Do you think the course was useful for:

- The information provided
- The knowledge acquired
- The skills/capacities developed
- The interest aroused
- The applicability of the contents to work activity
- The reflections stimulated

6. OVERALL ASSESSMENT

Could you make an overall assessment of the course, indicating:

- positive and critical aspects
- topics you would like to explore further
- further observations and suggestions.

The only way we can properly judge where we are is related to where we want to be.
-Wiggins G., 1998

BRAIN @ WORK

INFORMATION COMPETENCE AS BOOSTER FOR PROSPECTIVE SCIENTISTS

ASSESSMENT TOOLS 2022

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