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Publishing scientific research: A guide to identifying, assessing and submitting to scholarly journals

The purpose of this document is to provide suggestions on how to identify peer-reviewed journals suitable for submitting manuscripts about scientific research for publication. The following topics are addressed:

Understanding journal types

Traditional

Traditional academic journal publishers produce some of the most well-known "high-impact" journals. Some of these publishers are commercial businesses and some are professional or academic societies. With the rise in technology, most of them have moved to digital online distribution models, and some have incorporated Open Access options for some individual articles (fees paid by author).

- Pros: most recognized, more reliable review process, historical metrics
- Cons: copyright usually belongs to publisher with limited sharing options for authors, high subscription fees limit global audience, long publication process, limited interaction with readers

Open Access

Open Access (OA) journals maximise the potential of the internet by providing a range of additional functions that print journals cannot: live commenting, open public pre-publication review, social network sharing, immediate incorporation into indexes and databases, live article-level metrics, and of course, **free access** to an instantly global audience. A study published in December 2017 titled 'Monitoring the Transition to Open Access' by Universities UK examined 'hybrid' journals (subscription journals which offer OA for individual articles) and OA journals from a range of major and smaller publishers. They found that Open Access articles are downloaded between two and four times more than non-Open Access publications.

- Pros: free access to global audience, faster publication process, interactivity options with readers, flexible copyright and sharing options for authors
- Cons: lower recognition by promotion & tenure committees, fees for authors for some journals, many pseudo/predatory journals with high fees and low quality

Predatory

Predatory journals operate in the Open Access domain with apparent disregard for the integrity of the scientific process or support of their authors work. These journals and platforms have been deemed 'predatory publishers', but may be more accurately termed 'shell' publishers or journals, as what they offer in exchange for publication fees is insubstantial. Some key practices of Predatory Journals to look for as an author, and avoid doing as a journal editor or publisher, include a broad or random collection of subject areas for a journal; journal metrics from unusual and unrecognized sources (Index Copernicus Value, CiteFactor, Global Impact Factor, etc.); claims of Impact Factor or CiteScore, but journals not included in the Clarivate (http://mjl.clarivate.com/) or Scopus (https://www.scopus.com/source/browse.url) lists of journals, the two most reputable journal indexing services. The checklist on "Think Check Submit" (http://thinkchecksubmit.org/check/) is a useful reference. Many university libraries also have information about predatory journals which can be found by searching for "predatory journals site:edu" (which will restrict results to just university websites).

Assessing quality

The quality of a journal is determined by many things. Many authors are tempted to simply consider the "Impact Factor" or "Cite Score" and corresponding journal ranking listed in Journal Citation Reports (JCR) or Scimago. However, there are many journals that may be appropriate and useful to publish in that may not have high citation measures or even be indexed or ranked by JCR or Scimago at all. Even these journals, however, will have recognized and credible editors, editorial boards, peer review processes, and will operate

according to ethical scientific publishing principles. Below are descriptions of measures of quality that can help you determine if a journal is credible.

Editorial measures

- **Editor credibility** – The editor in chief (or co-editors) should have a credible history in the field of the journal. If they are really the editor, they will list their editor position on their own website or CV. Predatory journals sometimes list an editor who is not affiliated with the journal at all (check the editor's personal website or CV).

- **Editorial board credibility** – Similar to the editors, the editorial board should also be recognized in the field and have a body of research that reflects their qualifications to review and edit the topics covered by the journal. Search for some of the board members online to verify that they are real people and describe their affiliation with the journal on their website or CV.

- **Peer-review process** – Peer Review is the process of having an author's scholarly work evaluated by other scholars in that same field. "Peer review is intended to serve two primary purposes. Firstly, it acts as a filter to ensure that only high quality research is published, especially in reputable journals, by determining the validity, significance and originality of the study. Secondly, peer review is intended to improve the quality of manuscripts that are deemed suitable for publication. Peer reviewers provide suggestions to authors on how to improve the quality of their manuscripts, and also identify any errors that need correcting before publication."[1] If a journal does not indicate that submissions are peer-reviewed, it may still be a useful place to get visibility for your work, but it will not have academic or scientific credibility.

- **Scope statement and practice** – The websites for reputable journals always include a clear Scope (sometimes "Aims") statement that describes the scope of topics the journal covers. A review of the articles from a few issues will confirm that they all fit the scope statement. Most reputable journals have very clear and reasonably narrow scope statements. Predatory journals often cover a range of unrelated topics.

- **Indexing** – Reputable journals, even ones not indexed or ranked by Clarivate (Web of Science) or Scopus may still be indexed and included in other important databases in your field. Check the databases for your field. Usually the journal website will indicate where the journal is indexed.

- **Ethics statement** – Reputable journals operate according to ethical standards for scientific publishing and will almost always have an ethics statement on their website. Many also indicate if they are members of scientific publishing communities committed to ethical standards.

Citation measures

One of the most popular measures of the "quality" of a journal is the number of citations made by other authors to work published in that journal. The idea is that the more citations the articles of a particular

[1] Kelly, J., Sadeghieh, T., and Adeli, K. (2014). Peer review in scientific publications: Benefits, critiques, & a survival guide. *Journal of the International Federation of Clinical Chemistry and Laboratory Medicine 25*(3), 227–243. Retrieved July 6, 2019 from https://www.ncbi.nlm.nih.gov/pubmed/27683470.

journal gets, the more important that the journal must be to the field. This is usually referred to as "impact." Although "impact" is not always a measure of quality (lots of people could be citing bad research as an example of what not to do), it has become a proxy for quality. Citation measures are commonly used to classify journals for decisions about researcher promotion. Below are explanations of the different citation measures used by the most recognized journal ranking systems.

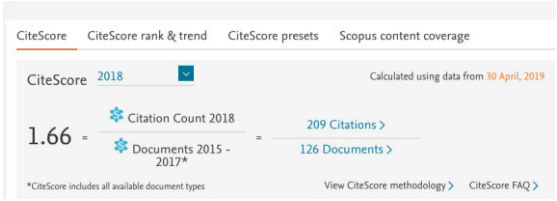
- **Impact Factor** (JCR): previous 2 years of citations to articles in those years

$$\mathrm{IF}_y = \frac{\mathrm{Citations}_{y-1} + \mathrm{Citations}_{y-2}}{\mathrm{Publications}_{y-1} + \mathrm{Publications}_{y-2}}$$

For example, *Nature* had an impact factor of 41.577 in 2017:[2]

$$\mathrm{IF}_{2017} = \frac{\mathrm{Citations}_{2016} + \mathrm{Citations}_{2015}}{\mathrm{Publications}_{2016} + \mathrm{Publications}_{2015}} = \frac{32389 + 41701}{880 + 902} = 41.577$$

- **Cite Score** (Scimago): yearly citations to articles in previous 3 years



- **H-index** (Scimago, Google Scholar): citations to the N most cited article... complicated

f(A)=10, *f*(B)=8, *f*(C)=5, *f*(D)=4, *f*(E)=3 → *h*-index=4
f(A)=25, *f*(B)=8, *f*(C)=5, *f*(D)=3, *f*(E)=3 → *h*-index=3

If we have the function *f* ordered in decreasing order from the largest value to the lowest one, we can compute the *h* index as follows:

h-index (f) = $\max_i \min(f(i), i)$

(See Journal rankings below)

Remember that these citation measures are only one measure of quality and do not necessarily provide the value you are looking for (See Career vs. Influence below).

Assessing value

Career vs. influence

Career vs. influence is a battle of priorities that all researchers struggle with. Publishing in some journals will increase your chances of promotion, but may not reach the audiences that will most benefit from your work and use it to expand knowledge and/or improve the world. Often it may be smaller journals covering narrower fields of enquiry that will enable you to have the greatest influence. Do not ignore these journals. If they are important in your narrow field you might be able to make a case to your promotion committee for recognizing publication in those journals.

Costs

Costs of publishing in some journals can be high. Open Access journals that do not have a lot of financial support to cover the costs of producing the journals ask the authors to share some of these costs. Sometimes it is worth the investment, but investigate the journal carefully to be sure it is not "predatory" (see Predatory journals above). Journals with the least costs to authors usually require authors to assign "ownership" of the article to the publisher (see Copyright below).

Copyright

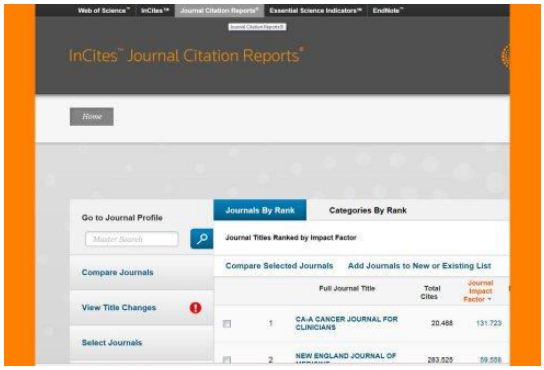
Copyright can be a very complicated issue and difficult to understand. Many traditional journals, especially those published by commercial publishers, require the author to relinquish copyright to the publisher. This often means that the author can no longer share their work freely because they no longer "own" it. Some publishers will retain copyright themselves, but allow authors to share the article in certain places (like their own websites) after an "embargo" period (e.g., 6 months after the article is published). Other journals will allow you to "purchase" some rights back from the publisher. Recently, one such practice has become known as providing an "Open Access" version of your article. In exchange for a fee from the author, the publisher will make the article free to access and share anywhere. Authors will want to be sure they understand clearly what the options are and whether the cost is worth it.

Finding journals

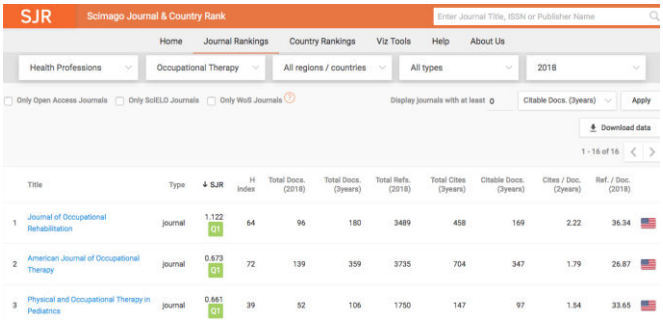
Journal rankings

Journal rankings lists offer one way of identifying journals whose articles are cited a lot by other authors (one indication of the impact of an article on the field). It is usually the journal rankings that determine how much credit an author can get for their promotion. There are many different ranking systems and should not be the only place to go to identify potential journals to publish in (see Career vs. influence above). Useful descriptions of these three ranking sites can be found at the University College London library website (https://libguides.ioe.ac.uk/c.php?g=482311&p=3299102).

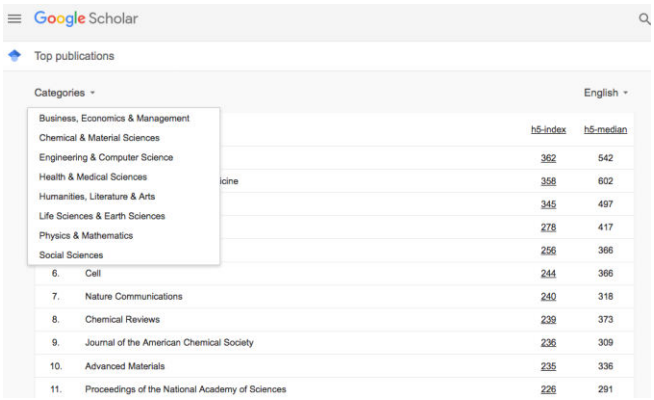
Review the top journals in your field by visiting the top three ranking sites and narrowing the list by your discipline and subject as best you can. If you cannot narrow the list to your precise field, you may need to look further down the list than the top 10 or 20 journals in a subject area to find the ones that are relevant for you. Identifying 10-15 journals from each list and then combining the lists can be a good way to start.



Journal Citation Reports from Clarivate Analytics (https://clarivate.com/products/journal-citation-reports/; requires subscription; use your library; access may be available to you through a national scientific information database like the Egyptian Knowledge Bank for scholars in Egypt)



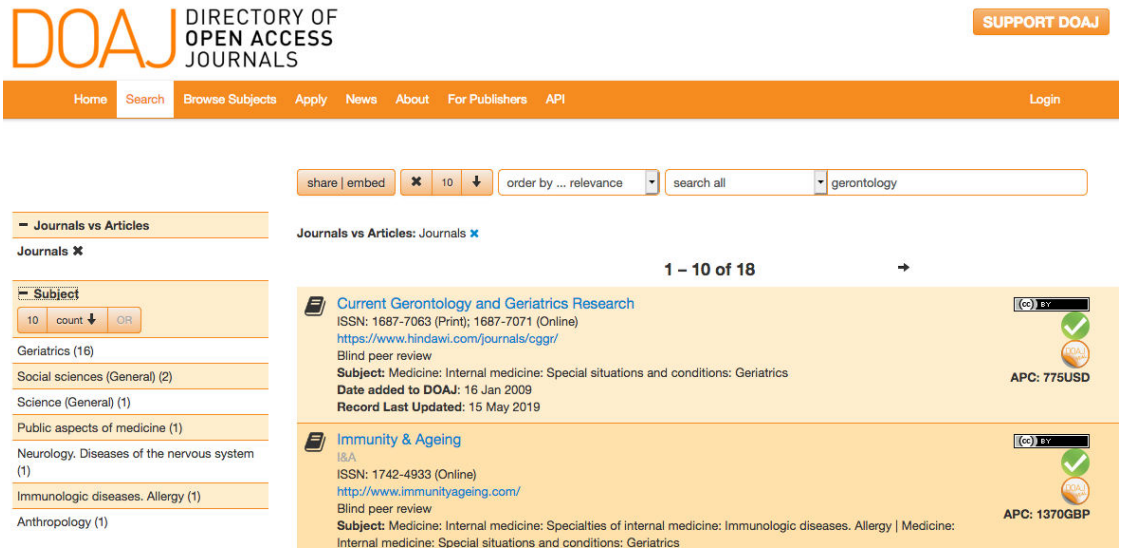
Scimago Journal and Country Rank from Elselvier (www.scimagojr.com/journalrank.php; free to view)



Google Scholar Metrics (scholar.google.com/intl/en/scholar/metrics.html; free to view)

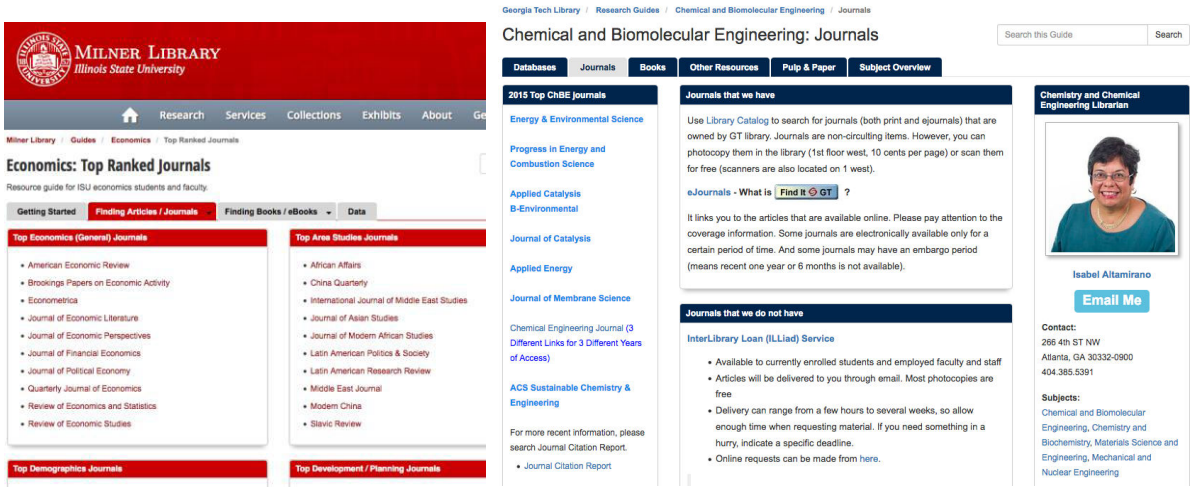
Directory of Open Access Journals (DOAJ)

Many of the most reputable Open Access journals are indexed in JCR and Scimago, as well as in Google Scholar. But the Directory of Open Access Journals (DOAJ) (doaj.org) has different subject organization and you may be able to find journals more easily here than elsewhere for your discipline.



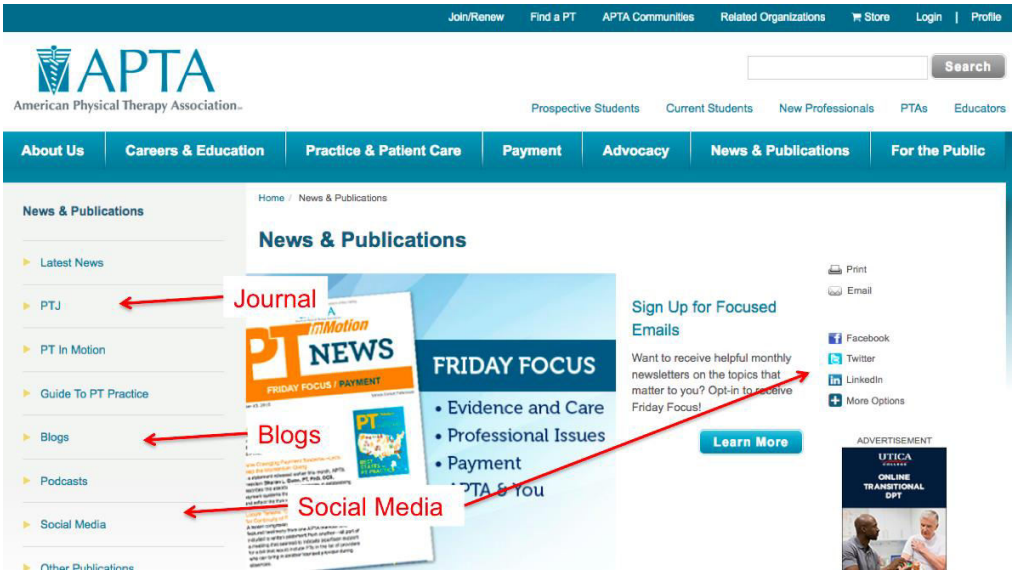
University libraries

Many university libraries, especially in North America and Europe, have librarians who specialize in specific disciplines and prepare lists of top journals in those fields. Often these librarians know about journals that may be credible even if they are not highly ranked in JCR or Scimago. In addition, sometimes the librarian themselves are featured on the page. If so, you should feel free to email them even if you are not a member of that university. They cannot provide you access to journals they subscribe to, but most librarians would be happy to help you in identifying journals. ***Search for "[discipline/subject] journals site:edu" to find lists of top journals in your field published on university websites (URLs ending in .edu).***



Associations and societies

Associations and societies of academics and professionals in a particular discipline or practice area often publish or recommend peer-reviewed journals. They also often sponsor conferences, host topical blogs (websites publishing brief articles/posts), communicate information via social media, and are led by important individuals in the field (see below sections for details on using these resources to identify journals). ***Search for "[your discipline/topic] associations" to identify associations related to your field.***

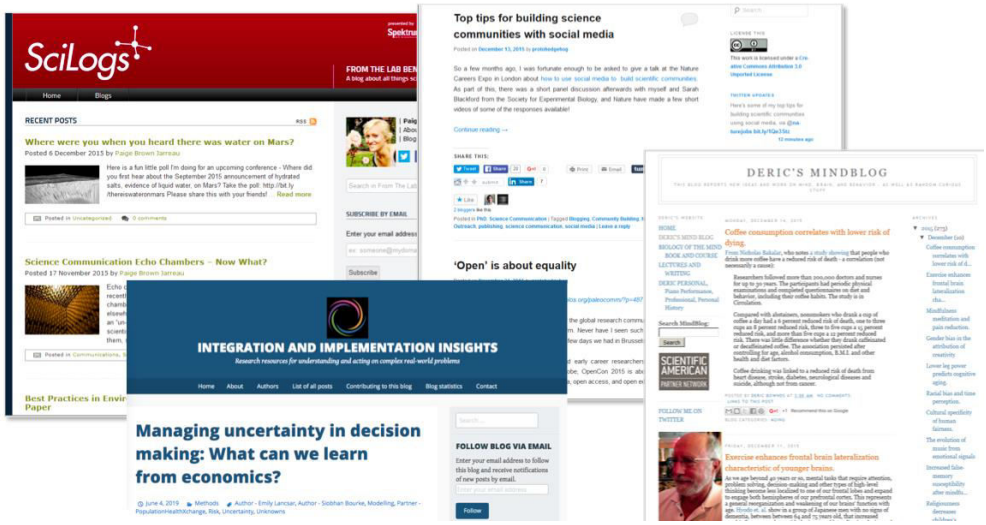


Conferences

Conferences and their websites and programs can be good places to identify important individuals in the field (e.g., plenary speakers, session leaders). The publication lists for these individuals (on their own websites or CVs) will often include valuable journals that might not be identified through other methods. ***Search for "[your discipline/topic] conference" to identify conferences related to your field.***

Blogs

Blogs (websites with brief articles/posts about issues in a field of study or practice) can be great places to learn about journals or individuals publishing research in your field. By reading blog posts (usually you can "subscribe" and receive emails when new articles/posts are added), you can search online to find the researcher/author and see what journals they publish in, which may be good for you to consider also. ***Search for "[your discipline/topic] blogs" to identify blogs about your field that might include research.***

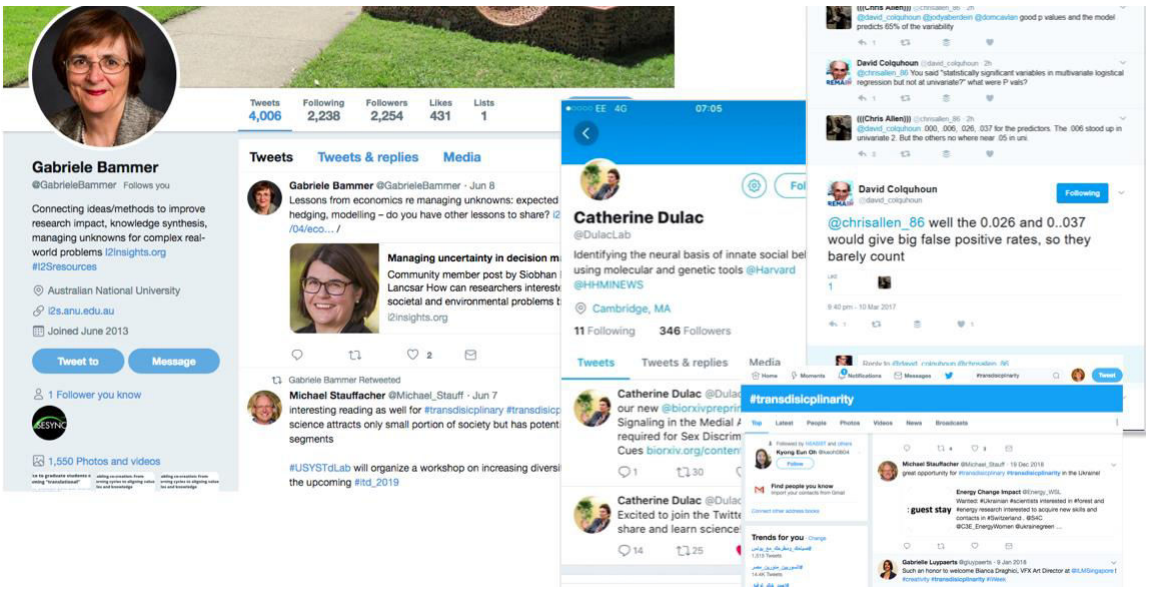


Social media

Social media like Twitter, LinkedIn, Facebook and academic social media sites like ResearchGate, Mendeley, or Academia.edu can be good places to find related research and learn where that research is published (journals you may not know about) or learn more about a researcher and see where they have published (See Individuals below).

Twitter is the largest site used by academics for interacting with each other, sharing knowledge, sharing their own work, discussing projects, and talking about their experiences. It enables you to discover people in your field whom you may not already know. Through the use of searching, filtered lists, #hashtags, or regular reading, Twitter can help you discover more journals to consider. ***Search for terms related to your research. Click on hashtags (e.g., #interdisciplinarity, #genomics) used in tweets to find***

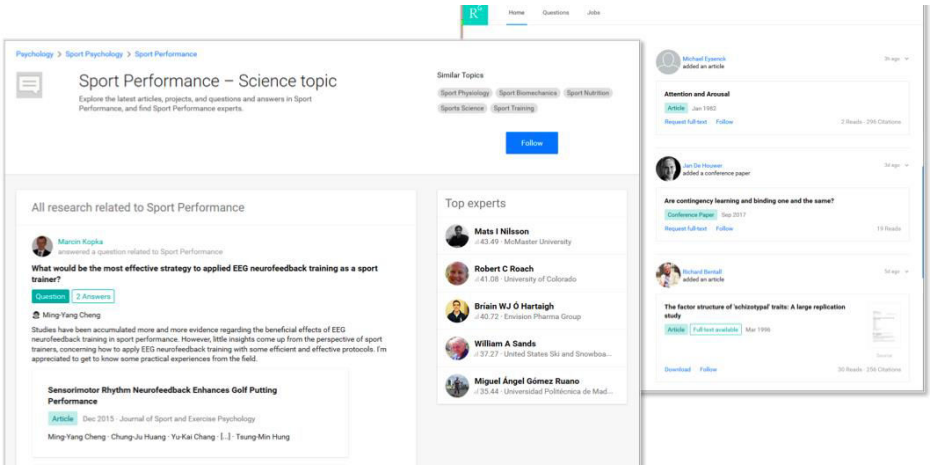
more tweets on that topic. Identify similar researchers from tweets. Follow relevant researchers and search for them online to see their publication lists.



ResearchGate, **Academia** and **Mendeley** are general academic networking sites. All of these sites can be useful for identifying research or researchers that publish similar research to your own so that you can identify what other journals might be good for you. Each have slightly different strengths:

- ResearchGate – best for interactivity (subject area discussions, following researchers, articles or topics)
- Academia – best as repository (with links to your papers)
- Mendeley – best as a reference management system (for finding, storing and managing citations)

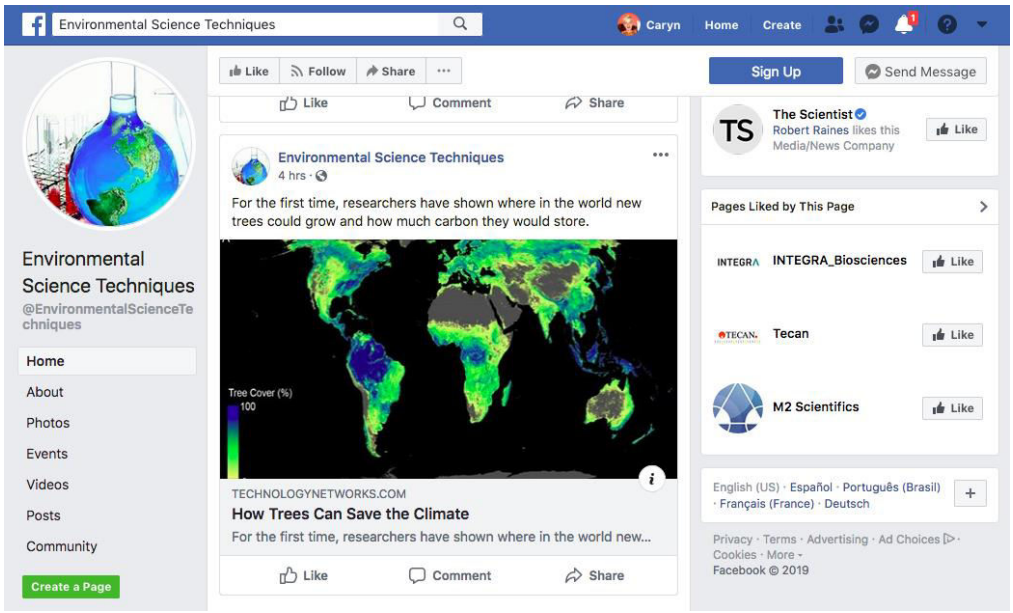
Add interest areas to your account profile with each account and every time you log in, the home page will show you recent research related to your interests. Follow researchers doing similar work, and search for them online to identify journals they publish in.



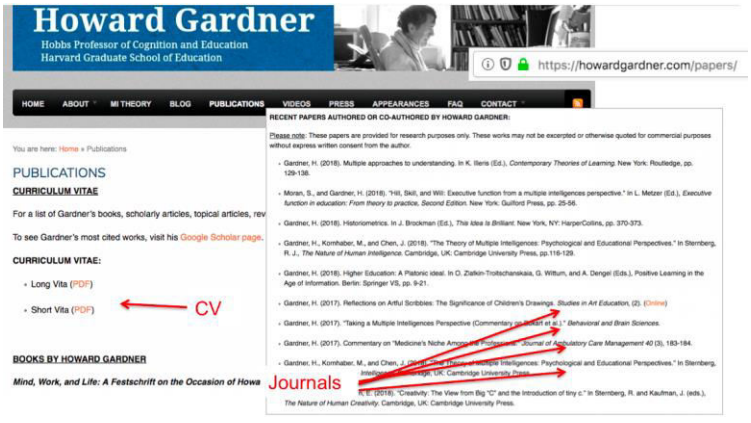
The following article is slightly dated, but it has a good description of the differences between these sites: "Academic networks contest: ResearchGate vs. Academia vs. Mendeley" (https://howtopublishinjournals.com/2014/05/18/academic-networks-contest-researchgate-vs-academia-vs-mendeley/)

LinkedIn is more formal than other platforms. It is effectively an online CV and is often a place you can find more information about individual researchers. ***Search for researcher names.***

Facebook is probably the most private of all social media sites, generally used for personal, friends and family and people you know. But you can participate in Groups (community spaces) or like/follow professional Pages about your area of research. This can often lead to discoveries of relevant journals and researchers. ***Search for topics and click on "Pages" or "Groups" on the top navigation bar.***



Individuals



Individual researchers are often overlooked as a way to discover useful journals. Researchers who work in your area, and are well known and respected in your field, often present their list of publications online in a CV (curriculum vitae) or publications list either on their own website or in an academic social media site like ResearchGate or Academica.edu. Reviewing their publication lists can often help to identify relevant journals that would not be discovered in other ways.

Industry, practice & policy

Many industry, practitioner or policy associations publish research updates or reports for their subscribers through practitioner magazines, blogs or conferences. These can also be great places to identify key scientific journals and individual researchers to investigate via the methods described above. Industry publications can be especially useful if your research is in a field with a very practical application and/or if you are at a stage in your career where long-term influence on society is most important.

Submitting manuscripts

Once you have identified journals that you believe are appropriate for publishing your research, be sure that you prepare your submission carefully to increase your chances of being accepted.

Scope and author guidelines

Read the scope statement and be sure the manuscript you plan to submit matches the topics that the journal covers. If it doesn't, your article will be rejected. The best journals receive lots of submissions, and most editors review manuscripts in the order received, so it may take time to receive the rejection. Avoid this waste of time by being sure your article matches the focus of the journal. Follow all the author guidelines about how to format your article and references, how to write and organize your article, and how to submit. There is nothing that frustrates editors more than authors who have not followed the author guidelines. Even if your research is amazing, if you haven't followed the guidelines it will take much longer to get published.

Components of a research article

Disciplines use different research methods, but most scientific research articles include the same basic components that you must cover in distinct ways. Usually each component is a separate section.

- **Introduction** – *The interesting situation in the world that has some important unanswered question(s)*
    - This is where you set the scene and describe the context for the problem you are exploring.
- **Problem Statement** – *The unanswered question(s) that, if answered, could help solve an important problem*
    - This is where you tell us [readers, reviewers, editors] WHY something needs to be done, that no one has done anything about it, and how what you are going to do is unique. It should not talk about your method or your results - the point is to tell us what isn't working or is going wrong and why we should care that it gets fixed, and that your research is a way to fix it. It's "why did I do this research" - what is the value (and then return to that value in the

Conclusion). For example, a problem is not "we need to explore high school information literacy", it's "information illiterate high school students are ill-prepared to succeed in university or work."

- **Literature Review** – *Building on previous valuable and related work strengthens author credibility*
  - This is where you discuss similar or related work that you are building on and where you describe theories and methods that inform your theoretical framework and research design
- **Methodology** – *Describing methods clearly and fully to show they will ensure valid and reliable answers to the question(s) strengthens author credibility*
  - It is important to have a separate methods section that describes your process of data selection, data collection and analysis methods without discussing the actual results. The purpose of this is two-fold: 1. So that reviewers and readers can verify the quality and credibility of your methods, and 2. So that readers can use the methodology described to reproduce similar research without getting distracted by your results.
- **Findings** – *Reporting findings completely and clearly strengthens author credibility*
  - Findings, or results, are only the outputs of your data analysis, not what you think they show or mean or suggest.
- **Discussion** – *Interpreting and organizing findings in relation to previous work and the question(s) provides authoritative answers and creates new knowledge*
  - The discussion is where you say what you think the findings mean.
- **Conclusion** – *Clarity about the contribution the research makes to the field highlights its value*
  - The Conclusion should be a short strong paragraph or two going back to the value of the research as proposed in the problem statement. The conclusion, which should not include any summarizing, should remind us how exciting and unique your research is, focusing mainly on what value it has, how it has contributed to addressing the problem identified in the Problem Statement, and why we should be as excited by your work as you are.

Writing

If the language of the journal is not your first language, be sure to find a native speaker (someone who speaks it as their first language) to review your manuscript and give you guidance on proper phrasing. Most journals do not have the resources to help you correct errors of incorrect grammar or expression that make your research difficult to understand.

Tables and figures

Tables and figures are useful to help readers visualize information. Review how tables and figures are presented in other articles of the journal and style yours in a similar way. Captions, column headers, and labels should be descriptive enough for the table or figure to be reasonably understood if viewed by itself. But all tables and figures should also be referenced and at least briefly described in the text as well.

Editorial process

When you submit an article to a journal it usually goes through a few stages, which can take more time than many authors like. Many authors do not understand that editors and reviewers do not receive money for reviewing and editing manuscripts for publication. This practice is designed to keep the scientific publishing process as free from corruption as possible. Some editors receive very small stipends or relief from teaching responsibilities, but these rarely compensate for the amount of work they do for the journal. If authors follow guidelines and respond to revision requests completely, the work will be easier for editors and reviewers and the faster these stages will go.

- **Triage** – First, the editors read submitted manuscripts and reject ones that are "out of scope" (not within the topic of the journal). Even research that is within the scope may be so poorly written, in terms of organization, style, or language, that those manuscripts must be rejected also. Depending on how many submissions are received daily, it could take weeks to receive notification of rejection.
- **Pre-Review revisions** – If a manuscript is considered potentially publishable, sometimes the editors will send it back to the author for corrections to formatting and organization prior to sending to reviewers. This is to help both the authors and the reviewers. If a manuscript has too many writing, organization, or formatting problems, the reviewers will be distracted by these and not be able to pay as much attention to the content of the research. This frustrates reviewers and makes the authors appear less credible. Journals that receive lots of submissions do not give authors this opportunity and will simply reject based on poor writing. This is another reason to pay attention to the author guidelines and writing skills.
- **Peer review** – If/when a manuscript is deemed ready, it is sent to reviewers. The reviewers usually need a few weeks to fully assess the manuscript. They will either advise to reject the manuscript at this stage, if the reviewers think the quality of the research or writing is not adequate, or they will recommend acceptance for publication on the condition that the author make changes.
- **Author revisions** – Reviewers will often make detailed suggestions for how to improve the article, but sometimes the suggestions are general or brief. Some authors contact the editor at this point to be sure they understand exactly what is expected of them. If the author does not accurately and fully make the requested changes, the revision process might require multiple stages. After revisions by the authors, manuscripts are reviewed again by the editors and sometimes by the reviewers.
- **Copy-editing and publication preparation** – Once the content of the manuscript is finalized, it undergoes final copy-editing (catching typos, etc.) and is arranged for print and electronic publication.

There are many steps to publishing scientific research and they often take a long time. This is part of the process of ensuring that only the best research is contributed to the ongoing advance of knowledge and application in the field. The best way for authors to help themselves through this process is to educate themselves about all the stages and follow the guidelines and requests provided by the journals themselves.

Good luck!

Author biography

These guidelines were prepared by Caryn Anderson, Adjunct Faculty at Simmons University in Boston, USA and Associate Editor of *Library and Information Science Research* (LISR), a peer-reviewed scientific journal about the research process and innovative research methods and applications in library and information science. In addition to her work as Associate Editor of LISR, Ms. Anderson has spent over ten years teaching and conducting workshops around the world (especially in developing countries) for faculty, students and professionals about a variety of aspects of research including methods, supervision, communication/writing, publishing, and translating research into policy and practice change.