



Researchers publish their results to establish their own claim to the research and to enable other researchers to build upon them. In the case of journal articles, only the richest institutions have been able to afford a reasonable proportion of all the scholarly journals published and so learning about and accessing such articles has not always been easy for most researchers. Open Access changes all this.

The World Wide Web provides the means for researchers to make their research results available to anyone, anywhere, at any time. This applies to journal articles regardless of whether or not their library has a subscription to the journal in which the articles were published as well as to other types of research output such as conference papers, theses or research reports. This is known as Open Access.

What Open Access is

The Open Access research literature is composed of free, online copies of peer-reviewed journal articles and conference papers as well as technical reports, theses and working papers. In most cases there are no licensing restrictions on their use by readers. They can therefore be used freely for research, teaching and other purposes. The Budapest Open Access Initiative (www.soros.org/openaccess/) defines Open Access thus:

"By 'open access' to this literature we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself."

What Open Access is not

There are various misunderstandings about Open Access. It is not self-publishing, nor a way to bypass peer-review and formal publication, nor is it a kind of second-class, cut-price publishing route. It is simply the means to make research results freely available online to the whole research community.

How is Open Access provided?

Open Access can be provided in two main ways. A researcher can place a copy of each article in an Open Access repository or can publish articles in Open Access journals. In addition, a researcher may place a copy of each article on a personal or departmental website. Whilst all three routes to Open Access ensure that far more users can access such articles than if they were hidden away in Closed Access (subscription-based) journals, the first two constitute much more systematic and organised approaches than the third and maximise the chance of other researchers locating and reading articles.

Open Access repositories are digital collections of research articles placed there by their authors. In the case of journal articles this may be done either before (preprints) or after publication (postprints). This is known as 'self-archiving'. These repositories expose the metadata of each article (the title, authors, and other bibliographic details) in a format compliant with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). To access the contents of these archives you can use Google, Google Scholar or other Web search engines. These search engines systematically harvest the contents of the archives worldwide, forming a database of current global research. Open Access repositories may be multidisciplinary and located in universities or other research-based institutions, or they may be centralised and subject-based, such as the one covering certain areas of physics and related disciplines, called arXiv. A list of Open Access repositories is maintained by the EPrints

site at Southampton University (<http://roar.eprints.org/>). If your institution does not have an archive, extensive information on how to set one up can be found on that website. Another list of repositories is maintained by and by the SHERPA Project at Nottingham University (<http://www.openoasis.org/>). Self-archiving is an international movement that is developing fast, and many research funders – such as the National Institutes of Health in the US and the UK's Research Councils – require their grant-holders to make their articles Open Access by self-archiving.

Some universities have also introduced policies of this kind and a list of institutions requiring their researchers to deposit in a repository is available at the Registry of Open Access Repository Material Archiving Policies (ROARMAP: <http://www.eprints.org/openaccess/policysignup/>). If you are concerned that your journal's publisher may have copyright restrictions that would prevent you from self-archiving your articles, this will in most instances not be the case. Current publisher policies on self-archiving and copyright are detailed on the SHERPA project website at Nottingham University (<http://www.sherpa.ac.uk/romeo.php>) and on the EPrints site (<http://romeo.eprints.org/>).

Open Access journals are peer-reviewed journals whose articles may be accessed online by anyone without charge. Some, mainly those published from a university department or with substantial subsidy, make no author or page charges. Others levy a charge for publishing an article, turning on its head the traditional model where a library pays for access to the contents of a journal through a subscription. This charge may be paid by the author(s) but in most cases it is financed by a research grant or institutional funds. Your institution may already have taken the decision to pay for Open Access articles to be published, or your grant-awarding body may have adopted this as one of its policies. A list of grant awarding bodies that explicitly permit funds to be used for this purpose is maintained on the BioMed Central website at <http://www.biomedcentral.com/info/about/apcfaq>. Many publishers now offer their authors the option of paying a publication charge to make a particular article open access, even if the remainder of the journal is only available on subscription.

A comprehensive list of Open Access journals in all subject areas is maintained by the University of Lund (<http://www.doaj.org/>). At the start of 2009 this list contains over 3800 journals. Many of these Open Access journals have impact factors and are indexed by the Institute for Scientific Information for its Web of Knowledge/Web of Science service.

Why should authors provide Open Access to their work?

There is accumulating evidence that shows that research articles that have been self-archived are cited more often than those that have not. A bibliography of studies on "The effect of open access and downloads ('hits') on citation impact" is maintained by the Open Citation Project (<http://opcit.eprints.org/oacitation-biblio.html>). Making research publications Open Access means that research has much more impact than before. Moreover, the research cycle – where work is published, read, cited and then built upon by other researchers – is enhanced and accelerated when results are available on an Open Access basis. Studies are also underway on the wider economic impact of open access to research publications following initial research by John Houghton and Peter Sheehan of Victoria University, Melbourne (see "The economic impact of increased access to research findings" at <http://www.cfses.com/documents/wp23.pdf>). Academic institutions are also finding open access repositories valuable in generating management information and reports on their research programmes and in raising awareness of their research profile.

Further resources

- The Open Access Scholarly Information Sourcebook website is a complete resource on open Access <http://www.openoasis.org>
- An essay published in American Scientist that discusses the principles and advantages of Open Access in more detail in English (<http://eprints.ecs.soton.ac.uk/13860/>) and in Spanish (<http://eprints.ecs.soton.ac.uk/15958/>)

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