United Nations
Educational, Scientific and
Cultural Organization

Scholarly Communication

Module

1

Scholarly Communication

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MODULE INTRODUCTION

Researchers, scholars and scientists main business is scholarly communication. We communicate about our work to others, as we push the boundaries of what we know and the society knows. We question established notions and truths about science. We share our findings with others, and in a way that is popularly known as scholarly communication which emerged with the publication of first journal in 1665. However, the term gained popularity only in the 1970s, as access to peer reviewed and scholarly communication became difficult. This module has four units covering introduction to scholarly communication, peer reviewed journals, electronica journals and databases and the Serials Crisis. At the end of this module, the learner is expected to be able to:

- Explain philosophy, mission, and objectives of scholarly communication
- Describe the process of scholarly communication
- Identify different channels of scholarly communication
- Discuss the dysfunctioning of the scholarly communication

In **Unit 1**, *Introduction to scholarly communication*, we have discussed different aspects of scholarly communication – particularly its genesis, importance and ethics of academic publishing, and different communication channels available in academic publishing. Some of these channels are commonly described as primary sources as they provide first-hand testimony or direct evidence concerning a topic under investigation. Historically, scientific journals were initiated by learned societies and other scholarly communities for reporting results of concluded research works or scientific discoveries. Now many for-profit publishers have started publishing research journals.

Unit 2, *Communicating with Peer Review Journals*, covers two important academic publishing channels, namely peer reviewed journals, conferences and their proceedings. This Unit also highlights different methods and procedures of peer reviewing for publishing primary literature emanated from research studies. The peer reviewing is essential for validating quality of research findings conveyed by researchers, which are subject to fulfilment of ethical standards and appropriate research design, sampling and other methodological issues.

In **Unit 3**, *Electronic journals and databases*, we have discussed the emergence of electronic journals in academic and research environment due to wide proliferation of information and communication technologies (ICT) in research communications and academic publishing. Scientific communities and scientific communications from the global South are getting substantive attentions through adaptation of electronic journals and electronic academic databases in the process of research communications.

In **Unit 4**, the *Serials Crisis*, we discuss the cost of peer reviewed publications and the problems faced by researchers in developing countries. The focus of this unit is on highlighting the problems and discusses possible solutions including the emergence of open access as one of the solutions. Open access journal publishing helps in mitigating some of the problems associated with serials crisis.

UNIT 3 ELECTRONIC JOURNALS AND DATABASES

Structure

3.0 INTRODUCTION

Academic and research publishing in recent times have experienced emergence of electronic platforms for effective research collaborations and research disseminations. Research communication and more particularly academic publishing processes require effective integration of information and communication technologies (ICT) for harnessing production of qualitative knowledge and dissemination to audiences globally. Peer-reviewed scholarly journals around the world are gradually migrating to electronic platforms, to make their contents globally visible, accessible, searchable and citable. Many peer-reviewed journals are now migrating from print edition to open access edition to make their knowledge resources freely accessible by the global researchers' communities.

On the other hand, exponential growth of scientific literature also has led to rapid disappearance of produced literature before it actually gets noticed by the scientific communities. Here, journal aggregators and online full-text databases help in long term digital preservation of journal contents in online environment, where multiple publishers make their contents available thorough third party service providers. Many publishers also collaborate up with more than one journal aggregators and full-text databases for making archived contents available from multiple service points.

In this Unit, characteristics and varieties of electronic journals and online research databases are discussed in details to help the learners in understanding availability of research literature as reliable proprietary electronic resources as well as open access resources in different platforms.

3.1 LEARNING OUTCOMES

At the end of this unit, you are expected to be able to

- Describe the basic characteristics of electronic journals and online academic databases;
- Explain the reasons for migration of peer reviewed journals from print to online platforms;
- Understand advantages of electronic version over print version of scholarly journal literature; and
- Identify different online platforms available for accessing and retrieving scholarly literature in academic and research environments.

3.2 EMERGENCE OF E-JOURNALS

Till the last quarters of the twentieth century, the scholarly journals were mostly distributed globally in print format through postal networks. Due to snail mail, many important research findings got delayed reaching to researchers located in distant countries. In print format, journal has limited readership as only one person can read a particular issue at a point of time. Other readers have to wait until their turn comes to have a glance at the latest issue of the journal. In the last quarter of the twentieth century, the publishers got interested in integrating information and communication technologies (ICT) in scholarly journal publishing for rapid global dissemination, expanding their markets to emerging nations and other developing nations. The for-profit as well as non-profit journal publishers then made extra efforts to reach the unreached through electronic journals or e-journals available through publishers' websites. An e-journal not only provides same contents as of a print journal, but can also provide material not possible in print journals.

E-journals can be distributed through journals' website, publishers' portal, e-journal gateway, and full-text databases of journal aggregators. Nowadays, many online bibliographic databases and online indexing & abstracting (I&A) services provide external full-text links to journal contents available on publishers' portal. Figure 7 indicates different channels of delivery of journal contents on electronic environment. Publishers provide unique document identifier to each published article, which is known as DOI or Digital Object Identifier[33]. Every DOI is registered with Digital Object Identifier System at www.doi.org and www.crossref.org. Bibliographic databases and I&A services interlink every article recorded in their databases with the unique DOI, so that users can easily identify and obtain full-text of relevant articles.

Table of contents (TOC) alert service is one of the major useful services for researchers to know and identify relevant articles in their areas of interests. E-journals can disseminate TOC alerts through various modes such as emails, mailing lists, RSS feeds, and social media to outreach their global audience.

[33] http://www.doi.org/

Some search engines, viz. Google Scholar, facilitate users to set an article alert on a specific search term or an author or an institution or a journal, so they get informed almost immediately when new contents become available on online platforms.

The beginning of the twenty first century is also marked by emergence of smart phones and mobile digital technologies such iPad, Tab, or similar devices. The researchers and academics are also increasingly using these mobile devices for information access and research collaborations. Many e-journals have started disseminating full-text journal contents through special Apps suitable for mobile devices. M-Science is growing now at much higher pace to supplement efforts in e-science mode of science and research communications.

Open access journals are necessarily electronic journals without any restriction of information access and content sharing and replication with due acknowledgement through researchers' personal or professional networks. Open access journals are also upgrading their platforms to make their full-text contents seamlessly accessible through M-Science platforms and mobile devices.

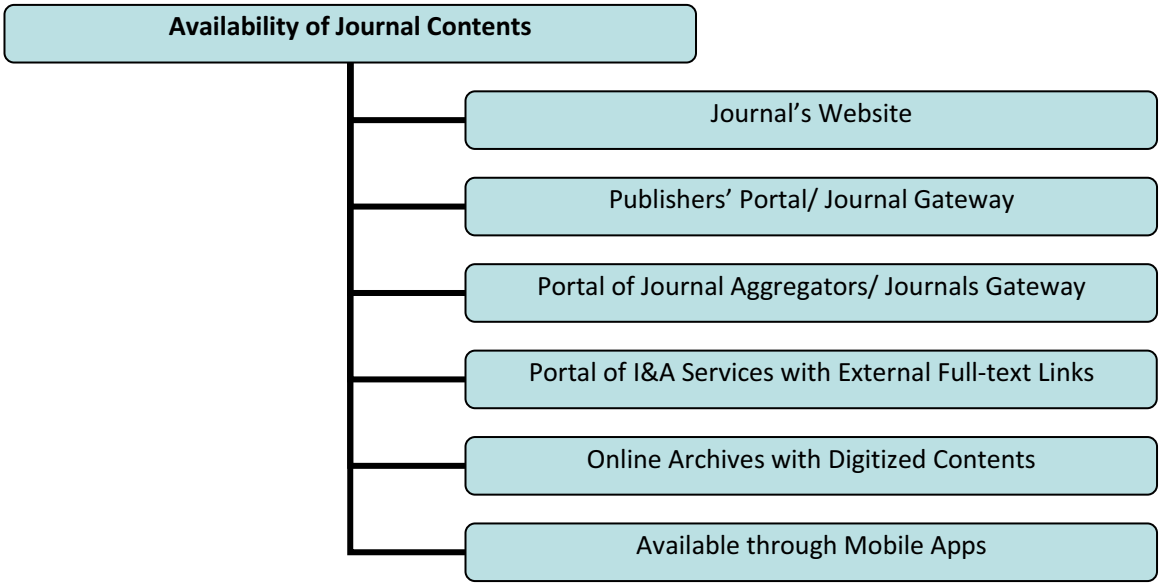

Figure 7: Delivery of Journal Contents in Electronic Environment

3.3 THE MIGRATION OF PEER REVIEWED JOURNALS FROM PRINT TO ONLINE PLATFORMS

The peer reviewed scholarly journals have been migrating to web-based platforms in recent years in addition to publishing their respective print edition. Most of the existing scholarly journals published from the advanced countries have already adopted dual modes of online and print formats. These journals now form a considerable mass of electronic publications. We also see emergence of new e-journals as online only edition, without publishing any print edition. Some of the existing scholarly journals have terminated their

print edition to publish online edition only. While a print edition has limited space to publish a few number of articles due to high cost of printing and distribution, online only edition has much more flexibility to accommodate more articles and features than its print counterpart. Electronic journals also have flexibility to publish 'articles in press' in advance – months before the articles being published with pagination and assigned issue number or volume number of a journal. E-journals also allow embedding of graphs, photos, video clippings, and hyperlink to other referred sources.

Migration of scholarly journals from print to web-based platforms essentially supports their global outreach strategy in order to achieve their global readership, global authorship and global marketing. The journal publishers also offer e-journals in bundles to their prospective institutional subscribers. The bundles can be formed on the basis of subject areas, viz., management sciences, engineering disciplines, applied sciences, biomedical sciences, etc. Generally, journals in STM (science, technology and medicine) disciplines are costlier than HSS (humanities and social sciences) disciplines. Also, journals in STM disciplines publish much higher number of articles, than journals in HSS disciplines. Journal frequency of STM journals and average number of articles in a STM journal volume are much higher than HSS journals.

Scientific disciplines have much higher growth potential. So new scientific journals target recently emerged or super-speciality subject areas, such as nanotechnology, nano materials, molecular biology, biotechnology, etc.

Frustrated with corporatized scholarly journals, which are in the clutches of profit-making multinational publishing companies or powerful lobbies, academic communities also sometimes seek alternative pathways in establishment of scientific journals of new kind with strong focus on unbiased and transparent peer-reviewing system. Thus, we see emergence of new kind of e-journals in recent time alternative to scientific cultural and scholarly communication practices. Participatory and transparent practices of new e-journals will help in developing new benchmarks in research communications.

Publishers of scholarly journals also seek new business model to explore new markets and continue their profitability. Toll-access model is a historically proven profiting model for journal publishers, but non-sustainable to subscribing institutions. Due to 'serials crisis' phenomena, libraries across the world are facing budget cuts, inflations and foreign currencies' negative fluctuation. Academic libraries don't have adequate financial strength to subscribe to all scholarly journals needed for their members. Thus, libraries go in selective subscription of journals based on available budgets and much relevance to academic curricula or research programmes in their respective universities or institutions. Many libraries also have discontinued or reduced their print subscription to accommodate new e-journals relevant to their library users. Lost ground of print journals is motivating new breed of e-journals to capture an ever-increasing market of scholarly databases.

Open access (OA) journals don't have any burden on academic libraries' budget. But research institutions have significant implications as many OA

journals accept manuscripts for publishing in their journals subject to paying an article processing charge (APC) or a publishing fee. Researchers in developing countries sometimes feel a pinch of APC as many of them don't have relevant budgetary provisions in their institutional budget or research project's budget.

Hybrid journals publish open access articles in their respective toll-access journals. Hybrid journals are subscription-based e-journals, which occasionally accept manuscripts for publishing as open access articles. All major for-profit publishers now accept open access articles in their conventional scholarly journals, subject to receiving an APC from contributing authors.

3.4 ELECTRONIC DATABASES OF JOURNALS

Electronic databases of scholarly journals are globally available to researcher communities through institutional subscription or open access mode. Any database essentially consists of several electronic records of related items. Each electronic record stores relevant metadata information. In the context of academic databases, an electronic record of an academic database contains information on article title, names of authors, their affiliation, institutional address, journal title, pagination, issue number, volume number, year of publication, abstract, DOI, and other relevant metadata. Five types of academic databases are usually available to researchers, namely:

i) Bibliographic Databases

ii) Citation Databases

iii) Full-text Databases

iv) E-Journal Gateways

v) Online Directories of Journals

These databases are briefly discussed in the following sections.

3.4.1 Bibliographic Databases

Bibliographic databases contain bibliographic records of papers, published in different peer-reviewed scholarly journals. Many indexing & abstracting (I&A) periodicals covering contents of published literature in different disciplines are available in print format. These periodicals systematically obtain and disseminate bibliographic records of recently published literature in their respective academic disciplines. Later, many of these I&A periodicals have discontinued publishing in print format. Instead, they started offering online I&A services in machine readable format. Many of these indexing services are available in dual print and online formats. These online databases are searchable using metadata. As these databases contain abstracts of scholarly literature, free text search is also made possible. These databases also provide external full-text links to journal contents available in publishers' portal, so that users can easily obtain full-texts of relevant literature. Table 2 provides an illustrative list of bibliographic databases and online I&A services**.** Many of these databases are freely available to researchers, while some of

them are available to subscribing institutions. Many bibliographic databases are available at multiple platforms as well as online citation databases, e.g. Web of Knowledge.

Table 2: Bibliographic Databases/ Indexing & Abstracting (I&A) Services – Some Examples

Name of Database	Since	Free Access	Producer	Subject Areas
AGRICOLA (Agricultural Online Access)	1942	√	U.S. National Agricultural Library	Agricultural Sciences & Farm Technologies
Education Resources Information Center (ERIC)	1966	√	U.S. Department of Education	Education
INIS (International Nuclear Information System)	1970	√	International Atomic Energy Agency	Nuclear Science
LISTA (Library, Information Science & Technology Abstracts)	-	√	Ebsco	Library & Information Science
MEDLINE (Medical Literature Analysis and Retrieval System Online) or MEDLARS Online or PubMed	1971	√	U.S. National Library of Medicine	Biomedical Sciences
Indian Science Abstracts (ISA)	1965	√	NISCAIR, India	STM
Biological Abstracts	1926	X	Thomson Reuters	Biological Sciences
CAB Abstracts	1973	X	CAB International	Life & Agricultural Sciences
Chemical Abstracts Service (CAS)	1907	X	American Chemical Society (ACS)	Chemical Sciences & Technologies
Current Contents Connect	1958	X	Thomson Reuters	All Areas
INSPEC (Information Services for the Physics and Engineering Communities)	1967	X	Institution of Engineering & Technology, UK	Physics & Engineering Areas
International Bibliography of the Social Sciences (IBSS)	1951	X	ProQuest	Social Sciences
LISA (Library and Information Science Abstracts)	1969	X	ProQuest	Library & Information Science
Sociological Abstracts	1952	X	ProQuest	Sociology, Social Sciences

3.4.2 Citation Databases

In addition to providing access to bibliographic records of source documents, citation databases systematically record referred literature listed with every published document as its list of references. The first major citation index – the

Science Citation Index – was launched in 1964 by the US-based Institute for Scientific Information (ISI). Some important online citation databases of journal literature available these days are, namely:

- Scopus[34], produced by Elsevier B.V.
- Web of Science[35] (WoS), produced by Thomson Reuters. WoS consists of Science Citation Index Expanded (SCI-Expanded), Social Sciences Citation Index (SSCI) and Arts & Humanities Citation Index (A&HCI).
- Indian Citation Index[36] (ICI), produced jointly by the Knowledge Foundation and Diva Enterprises India Private Ltd.
- SciELO Citation Index[37], produced jointly by SciELO and Thomson Reuters.
- Chinese Science Citation Database[38], produced jointly by Chinese Academy of Sciences and Thomson Reuters.

These online citation databases are available to subscribing institutions only. There are a few citation search engines, namely:

- Google Scholar Citations[39], produced by Google, Inc.
- Microsoft Academic Search[40], produced by Microsoft, Inc.
- CiteSeerX[41], hosted by Pennsylvania State University, USA.
- INSPIRE-HEP[42] – the High Energy Physics Information System, hosted by CERN, Switzerland
- ChemxSeer[43], hosted by Pennsylvania State University, USA.

Citation databases cover many open access journals and open access articles published in hybrid journals. You will learn more about citation databases and citation-based tools for evaluation of scientific productivity in Unit 2 of Module 4.

3.4.3 Full-text Databases and Journal Aggregators

The e-journals are scattered on respective publishers' portals and individual journals' websites. Academic researchers sometimes don't get access to many of these contents as some journals are not subscribed by their respective institutions. Some journal aggregating databases aggregate full-text journal contents in common searchable databases for providing unified/ single interface online access to researchers. Aggregators usually provide access to relatively few months' older journal contents, as aggregators are third party service providers – not actually publishers of scholarly journals. These are not

[34] http://www.elsevier.com/online-tools/scopus
[35] http://wokinfo.com/
[36] http://www.indiancitationindex.com/
[37] http://wokinfo.com/products_tools/multidisciplinary/scielo/
[38] http://wokinfo.com/products_tools/multidisciplinary/cscd/
[39] http://scholar.google.co.in/intl/en/scholar/citations.html#citations
[40] http://academic.research.microsoft.com/
[41] http://citeseerx.ist.psu.edu/index;jsessionid=2947E3DF710ACFAC8BF48EB2906668D6
[42] http://inspirehep.net/?ln=en
[43] http://chemxseer.ist.psu.edu/

designed initially as full-text resources but as secondary information resources. Earlier some of the aggregators also offered CD-ROM-based full-text databases, released at periodic intervals containing collections of journal content. With the passage of time they discontinued producing CD-ROM-based products, and have started online portals for disseminating full-texts of journals. Table 3 provides an illustrative list of journal aggregators. The EBSCOhost and ProQuest are leading aggregators' databases having considerable market share in both developed countries and developing countries. They earlier offered CD-ROM-based full-text journal contents to many libraries around the world. Table 4 provides illustrative list of full-text databases, which are mostly available in open access domain. Subject repositories and institutional repositories are also online full-text databases having varieties of scholarly contents. These searchable online databases store and retrieve journal literature and other forms of scholarly literature such as book chapters, conference papers, dissertations and monographs. Some repositories only store pre-print and post-print versions of journal contents due to copyright restrictions or embargo policies of for-profit publishers. Although, authors are allowed to self-archive publishers' version if these are made available through Creative Commons or copyleft or other unrestrictive licensing.

Table 3: Illustrative List of Journal Aggregators

Name	Access Mode	Website	Coverage
China Knowledge Resource Integrated Database (CKNI)	Subscription-based	Eng.oversea.cnki.net	Multidisciplinary research contents, sourced from peer-reviewed scholarly journals from China and other Chinese-speaking countries.
EBSCOhost Online Research Databases	Subscription-based	Ebscohost.com	Multidisciplinary research contents, sourced from scholarly publishers, university presses and professional associations.
IndianJournals.com	Subscription-based	IndianJournals.com	Multidisciplinary research contents, sourced from peer-reviewed scholarly journals from South Asian region.
Ingenta Connect	Subscription-based	IngentaConnect.com	A bibliographic database of multidisciplinary research contents with external full-text links.
JSTOR	Subscription-based	Jstor.org	A digital library of academic journals, books, and primary sources. Originally contained digitized back issues of academic journals, it now includes books and current issues of some journals.
MetaPress	Subscription-based	MetaPress.com	Multidisciplinary online hosting service for scholarly publishers, university presses and learned societies.
Project Muse	Subscription-based	Muse.jhu.edu	Social sciences and humanities from non-profit publishers.
ProQuest Research Library	Subscription-based	ProQuest.com	Multidisciplinary research contents, sourced from scholarly publishers, university presses and professional associations.

Table 4: Illustrative List of Full-text Databases

Name	Access Mode	Website	Coverage
arXiv	Open Access	arXiv.org	E-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics.
bioaRxiv	Open Access	bioaRxiv.org	A preprint server for biology.
EconPapers	Open Access	EconPapers.Repec.org	A free bibliographic database of economics and finance papers with majority freely downloadable.
e-LIS	Open Access	Eprints.rclis.org	E-prints in library and information science (LIS) – an international OA repository for academic papers in LIS.
IDEAS	Open Access	Ideas.Repec.org	A central index of economics and finance research, including working papers, articles and software code with external full-text links.
PeerJ PrePrints	Open Access	Peerj.com/preprints/	A 'preprint server' for the biological sciences, medical sciences, and health sciences.
PubMed Central	Open Access	Ncbi.nlm.nih.gov/pmc/	A free full-text archive of biomedical and life sciences journal literature.

3.4.4 E-Journal Gateways

Electronic journal gateways host full-texts of different scholarly journals, published by various publishers. E-journal gateways are collaborative efforts of mainly non-profit publishers including research councils and learned societies for freely reaching out global audiences through single searchable portals. These gateways are often supported by the regional research councils or international research funding agencies. These gateways greatly increase the journals' accessibility to researchers and educators around the globe – particularly intra-region and also inter-region, thus making the research works useful to a wider audience. This aggregation also helps in crosscutting academic disciplines in a larger context to support discourses in multidisciplinary and trans-disciplinary subject areas within the region. Table 5 provides an illustrative list of e-journal gateways. Some the e-journal gateways, as mentioned, were launched with supports from the INASP's the Journals Online (JOL) project. International Network for the Availability of Scientific Publications (INASP) helps in capacity development of non-profit academic publishers in developing countries in launching e-journal gateways for their respective country or a region using the open source software PKP Open Journal Systems (OJS).

Table 5: Illustrative List of E-Journal Gateways

Name of Gateway	Access Mode	Regional Focus	Website
African Journals Online (AJOL)*	Open Access	Africa	Ajol.info
Bangladesh Journals Online (Bangla JOL)*	Open Access	Asia	Banglajol.info
Mongolia Journals Online (Mongolia JOL)*	Open Access	Asia	Mongoliajol.info
Nepal Journals Online (Nepal JOL)*	Open Access	Asia	Nepjol.info
Philippine E-Journals	Open Access	Asia	Ejournals.ph
Sri Lanka Journals Online (Sri Lanka JOL)*	Open Access	Asia	Sljol.info
Latin America Journals Online (LAM JOL)*	Open Access	Latin America	Lamjol.info
Redalyc	Open Access	Ibero-America	Redalyc.org
SciELO (Scientific Electronic Library Online)	Open Access	Latin America	SciELO.org
* Part of the INASP's the Journals Online (JOL) project			

3.4.5 Online Directories of Journals

In Unit 1 of Module 1 you have learned about various online directories available for identifying scholarly journals along with their additional details. Table 6 provides an illustrative list of Online Directories of scholarly Journals. The *Ulrich's Periodicals Directory* – owned by ProQuest LLC – is highly popular in academic and research circles. Its online edition, known as UlrichsWeb, is a searchable database covering about 336,000+ periodicals. It provides information about popular and academic magazines, scientific journals, trade journals, newspapers and other serial publications. Directory of Open Access Journals (DOAJ) is a searchable multidisciplinary directory of open access scholarly journals. In addition to providing detailed information on scholarly journals, DOAJ is also searchable at article level for about 5,700 journals. SHERPA/RoMEO on the other hand provides information about open access policies of the journals and publishers, to help researchers in self-archiving related decision making. In this database RoMEO offers four colour-codes depicting four different archiving policies of journals and publishers. For example, Green indicates that authors can archive pre-print and post-print or publisher's version/PDF; blue indicates that authors can archive post-print (i.e. final draft post-refereeing) or publisher's version/PDF; yellow indicates that authors can archive pre-print (i.e. pre-refereeing), while white indicates that archiving is not formally supported. You will know about many other useful online directories of academic periodicals in Unit 1 of Module 1.

Table 6: Indicative List of Online Directories of Journals

Directory Name	Website	Coverage
Directory of Open Access Journals (DOAJ)	DOAJ.org	9,800+ journals
SHERPA/RoMEO – Journals' and Publishers' Open Access Policies	Sherpa.ac.uk/romeo/	22,000+ journals
UlrichsWeb (Ulrich's Periodicals Directory)	UlrichsWeb.com	336,000+ periodicals

3.5 LET US SUM UP

In this Unit you have learned about emergence of electronic journals in academic and research environment due to wide proliferation of information and communication technologies (ICT) in research communications and academic publishing. Nowadays no scholarly journal can be imagined without having its online presence. Every journal publisher worth the name, irrespective of its standing as for-profit or non-profit, has embraced ICT-enabled publishing environment. Thus, electronic journals are a reality in the twenty first century. The researchers in the developing world, while publishing in regional or national-level academic journals, get ensured that their research contributions can reach across the globe through e-journal gateways, subject repositories, online bibliographic or full-text databases and e-resources. Scientific communities and scientific communications from the global South are getting substantive attentions through adaptation of electronic journals and electronic academic databases in the process of research communications. With the passage of time we see many electronic journals have adopted principles of open access (OA), and transformed themselves into OA journals. We now have globalized views of scientific discourses as free flow of scientific contents is ensured in ICT-enabled OA environment. Open access movement has created interactive spaces for OA channels, such as, OA journals, OA knowledge repositories and OA e-journal gateways.

You will learn more about OA movements and OA channels of research communications in Module 2 and Module 5 of this self-directed learning course.

3.6 CHECK YOUR PROGRESS

1) What are the advantages of electronic journals?

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2) What is the advantage of ToC alert service for scholarly journals?
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3) What are the channels of delivery of journal contents in electronic environment?
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4) Why do peer-reviewed journals migrate from print to online platforms?
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5) Where can you find a scholarly journal's ISSN?
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6) Which type of journal does publish OA articles, while publishing toll-access articles as well?
   a) Open Access Journal
   b) Subscription-based Journal
   c) Hybrid Journal
   d) E-Journal Gateway

7) Which company does own Ulrich's Web?
   a) Thomson Reuters
   b) ProQuest
   c) Elsevier
   d) Springer

8) Which is not an I&A service?
   a) Chemical Abstracts Service
   b) LISA
   c) MetaPress
   d) MEDLINE

9) Which is not a citation search engine?
   a) Google Scholar
   b) Microsoft Academic Search
   c) INSPEC
   d) CiteSeerX

ONLINE VIDEOS TUTORIALS

There are a number of video tutorials available on topics discussed in this Unit. Some of the tutorials were developed by the reputed institutions, libraries and scientists. Now, you may learn more about how you can become an active researcher contributing primary research literature, and how you would be involved in communicating research as an author to your fellow scientists.

- *Bibliographic Databases* **Video**[44]
- *Bound Journals and Electronic Databases* **Video**[45]
- *Citation Indexing* **Video**[46]
- *Finding Full Text from Article Databases* **Video**[47]
- *How to Locate a Journal's ISSN* **Video**[48]
- *How to Use a Database to Find Articles* **Video**[49]

[44] http://www.youtube.com/watch?v=vfOvnQPgQVY
[45] http://www.youtube.com/watch?v=u8ynIOzzvCI
[46] http://www.youtube.com/watch?v=uYTZouNlxWo
[47] http://www.youtube.com/watch?v=WY5jb13jhzQ
[48] http://www.youtube.com/watch?v=vq9YJ3d3vks
[49] http://www.youtube.com/watch?v=RslV_X9_pLo

ANSWERS TO CHECK YOUR PROGRESS

Unit 1
(1) a, (2) d, (3) a, (4) d, (5) b

Unit 2
Q6. (a) iii, (b) iii, (c) ii, (d) i.

Unit 3
(6) c, (7) b, (8) c, (9) c.

Unit 4
Q.(6) ii, (7) iii, (8) i, (9) iv, (10) ii.

GLOSSARY OF TERMS

Term	Definition
Academic Conference	It is a meeting for academicians and researchers to present and discuss their work. Together with academic or scientific journals, conferences provide an important channel for exchange of information between researchers.
Academic Database	It is a database of bibliographic records, an organized digital collection of references to published literature, including journal and newspaper articles, conference proceedings, research reports, patents, books, etc.
Academic Journal	It is a peer-reviewed periodical in which scholarship relating to a particular academic discipline is published. Academic journals serve as fora for the introduction and presentation for scrutiny of new research, and the critique of existing research.
Article Processing Charges	A central mechanism for funding Open Access (OA) scholarly publishing, by charging a fee from authors willing to publish in an OA journal.
Bibliographic Database	It is a database of bibliographic records, an organized digital collection of references to published literature, including journal and newspaper articles.
BRICS Countries	A group of emerging countries belong to broad category of developing countries. Represented countries are Brazil, Russia, India, China and South Africa.
Citation	It is a reference to a text or part of a text identifying the document in which it may be found.
Citation Index	It is a bibliographic tool in print or electronic format that lists all referenced or cited source items published in a given time span.

Copyleft	An arrangement whereby software or artistic work may be used, modified, and distributed freely on condition that anything derived from it is bound by the same conditions.
Creative Commons license	It is one of the several public copyright licenses that enable the free distribution of an otherwise copyrighted work. A CC license is used when an author wants to give people the right to share, use and build upon a work that they have created.
Database	It is an organized collection of data held in a computer, especially one that is accessible in various ways.
Gateway	It is a device used to connect two different networks, especially a connection to the Internet.
Gold Open Access	A term to describe when authors provide open access by publishing in an open access journal.
Green Open Access	A term to describe when authors provide open access by self-archiving their journal articles in an OA repository.
Hybrid Journal	It is a kind of journal which itself is not fully open access, but authors may pay a sum of money to make their articles open access. This type of open access articles is called "Gold OA". This is also known as hybrid open access journal.
Indexing & Abstracting Service	It is an alerting service that provides bibliographic data and abstracts of new and latest research.
Inter Library Loan	A service whereby a user of one library can borrow books or receive photocopies of documents that are owned by another library.
Least Developed Country	A country that, according to the United Nations, exhibits the lowest indicators of socioeconomic development, with the lowest Human Development Index ratings of all countries in the world.
Patent	It is a set of exclusive rights granted by a sovereign state to an inventor or their assignee for a limited period of time, in exchange for the public disclosure of the invention.
Peer Review	It is the evaluation of work by one or more people of competence to the producers of the work. It constitutes a form of self-regulation by qualified members of a profession within the relevant field.
Primary Sources	They provide first-hand testimony or direct evidence concerning a topic under investigation. They are created by witnesses or recorders who experienced the events or conditions being documented.
RSS Feed	It uses a family of standard web feed formats to publish

	frequently updated information: journal contents, blog entries, news headlines, audio, video, etc.
Scholarly Journal	It is the same as academic journal.
Scopus	It is the world's largest abstract and citation database of peer-reviewed literature.
Secondary Sources	In scholarship, a secondary source is a document or recording that relates to or discusses information originally presented elsewhere. An indexing & abstracting database is a kind of secondary sources, so are annual reviews in the field.
Serials Crisis	A term to describe the exponential increase in subscription cost of many scholarly journals.
Symposium	It is an academic meeting for researchers to present and discuss their work.
USB Flash Drive	A data storage device that includes flash memory with an integrated Universal Serial Bus (USB) interface.
Web of Science	It is the world's second largest abstract and citation database of peer-reviewed literature.

LIST OF ABBREVIATIONS

A&I	Indexing and Abstracting
AAAS	American Association for the Advancement of Science
ACM	Association for Computing Machinery
ACS	American Chemical Society
AICTE	All India Council for Technical Education
APC	Article Processing Charge
BRICS	Brazil, Russia, India, China and South Africa
CD-ROM	Compact Disc Read-Only Memory
CIOMS	Council for International Organizations of Medical Sciences
COPE	Committee on Publication Ethics
DOAB	Directory of Open Access Books
DOAJ	Directory of Open Access Journals
DOI	Digital Object Identifier
E-Science	Electronic Science
ETD	Electronic Theses and Dissertations
FAQ	Frequently Asked Questions
HINARI	Health Internetwork Access to Research Initiative
HSS	Humanities and Social Sciences

I&A	Indexing & Abstracting
ICSU	International Council for Science
ICT	Information and Communications Technology
IEEE	Institute of Electrical and Electronics Engineers
ILL	Inter Library Loan
INASP	International Network for the Availability of Scientific Publications
INDEST	Indian National Digital Library in Engineering Sciences and Technology Consortium
ISBN	International Standard Book Number
ISSN	International Standard Serial Number
JCR	Journal Citation Reports
JOL	Journals Online project
LDCs	Least Developed Countries
M-Science	Mobile Science
OA	Open Access
OAJSE	Open Access Journals Search Engine
OASPA	Open Access Scholarly Publishers Association
OCS	Open Conference Systems
OhioLINK	Ohio Library and Information Network
OJS	Open Journal Systems
OpenDOAR	Directory of Open Access Repositories
OSS	Open Source Software
PKP	Public Knowledge Project
Q&A	Questions and Answers
R&D	Research and Development
RSS	Rich Site Summary or Really Simple Syndication
SANLiC	South African National Library and Information Consortium
SCI	Science Citation Index
SciELO	Scientific Electronic Library Online
STM	Science, Technology and Medicine
TOC	Table of Contents
ToC	Table of Contents
UGC	University Grants Commission, India
UNESCO	United Nations Educational, Scientific and Cultural Organization
USB	Universal Serial Bus

WAME	World Association of Medical Editors
WHO	World Health Organization
WoK	Web of Knowledge
WoS	Web of Science

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