Journal of
Medical Microbiology & Diagnosis

Molina, J Med Microb Diagn 2012, 1:4
DOI: 10.4172/2161-0703.1000e108

Editorial Open Access

The Scholarly Communication in the Science 2.0 Era

Nora Beatriz Molina*

Cátedra de Microbiología y Parasitología, Facultad de Ciencias Médicas, Universidad Nacional de La Plata, Argentina

Keywords: Web 2.0, Scholarly communication, Open Access, Microbiology, Semantic Web

The concept of Science 2.0 was introduced several years ago to describe the new generation of online-based tools for researchers allowing easier data linking, using, sharing, collaboration and publishing. The new technologies of social Web (or Web 2.0) include blog platforms, social networking sites, bookmarking systems, virtual laboratories, wikis, e-learning systems or information management servers, among other new developments. [1-3].

One of the main contributions of Science 2.0 is the use of platforms to link researchers, which can be used to exchange information and scientific articles. Actually, there are several academic blogs which have a clear and modern design, with variable web presence. Some achieve about 1 million members in more than 190 countries and others are fast-growing, with an average of 10,000 new members per month [3]. Most academic blogs have presence in the libraries, although some of these blogs allow the search of free full text documents, it does not offer many advantages over metadata harvesters and metasearch engines [2-4].

Web 2.0 has also shaped a revolutionary change within the scientific community. Before the Internet, doing research involved a library, searching of catalogs, and reading printed books and journals. Actually, over 90% of Scientific, Technical and Medical journals (STM) are online, and researchers have downloaded 1 billion articles per year and 10 million printed pages per year [5].

Scientific information overload has led researchers to change their seeking and reading patterns of scholarly articles. Academics are reading across a wider range of sources and the range of journals has grown from 13 titles in 1970 to approximately 23 titles by 2001 [6]. The average time spent on reading an article has decreased from 48 minutes in 1977 to 34 minutes in 2005. Faculty members of seven universities in the United States and Australia in STM fields read between 28 and 35 articles per month and spend an average of 24 minutes per reading. Approximately 50% of the readings came from library-provided resources, which are the single largest source of readings for everyone [7, 8].

The number of peer reviewed journals published annually has been growing at a steady rate of about 3.5% per year. From the first journal, published in 1665, the number of scholarly journal titles has increased steadily, reaching 24,000 in 2006, and it has been estimated that about 1,350,000 articles per year were published in peer-reviewed journals [9, 10].

According to the United Nations Educational, Scientific and Cultural Organization, in 1997, the developed countries had approximately 88% of all STM publications registered by the Science Citation Index (UNESCO, 2001). Also, the Network of Science and Technology Indicators (RICYT, 2011) has reported that, in 2009, less than 5% of the global publications were from Latin America. In the same way, a study published in 2004 indicated that the percentage of authors from low-income countries has a representation lesser than 26% and only 5% of editorial members belong to these countries [11-13].

An article published in the WHO Bulletin indicates that the low representation from the developing world was related to numerous factors, considering poor access to scientific literature to be a highly significant factor [13]. Therefore, expanding access to the scholarly journals and other resources, like e-books, monographs and international conferences would contribute to enhance the participation of developing countries in the scientific research world.

Open Access (OA) has been an important route to increasing availability of research articles that are free of use. In the last decade, the number of OA journals increased by 500% and the scholarly articles by 900% [14, 15]. In 2011, the number of OA peer reviewed journals was around 7700 and the number of OA articles was roughly 250,000 [9, 10, 16].

Currently, open access can be provided in different ways. At present, several online initiatives can make the information more affordable to researchers of developing countries. Examples of these initiatives are PubMed, Public Library of Sciences (PLOS), Health InterNetwork Access to Research Initiative (HINARI), and Directory of Open Access Journals (DOAJ). Latin American countries are also participating in the expansion of knowledge with initiatives such as Biblioteca virtual de Salud (VHL/BVS), Literatura Latinoamericana en Ciencias de la Salud (LILACS) and Scientific Electronic Library (SciELO). These databases have links to the Pan-American Health Organization's (PAHO) and the Latin American and Caribbean Center on Health Sciences Information (BIREME) [17].

While scholarly journals have undergone a great change, the fundamental structure of the research article has remained relatively unaltered by this digital revolution. Certainly, the existing formats of scholarly communication (HTML, PDF) are not tailored for knowledge transfer. The Semantic Web, a new development of Web 2.0, allows access to scientific content in the form of interactive figures, document summaries, and numerical datasets that are accessible and actionable. This Web technology provides a better linking to other resources (external information sources, cited references, data fusion) and improves access to information (document summaries, tag clouds, tag trees). Also, it incorporates reference management tools (to save, organize, tag, share and download bibliographic references) and permits the re-ordering of reference lists (numerical or alphabetical order, publication year and frequency of in-text citation) [9, 18].

In Medical Microbiology, data fusion allows researchers across the world to study an infectious disease know the evolution of the infection in the geospatial location and compare all the reports of the same dise-

***Corresponding author:** Nora Beatriz Molina, Cátedra de Microbiología y Parasitología, Facultad de Ciencias Médicas, Universidad Nacional de La Plata, Buenos Aires, Argentina, E-mail: nbmolina@aetos.med.unlp.edu.ar

Received May 20, 2012; **Accepted** May 22, 2012; **Published** May 27, 2012

Citation: Molina NB (2012) The Scholarly Communication in the Science 2.0 Era. J Med Microb Diagn 1:e108. doi:10.4172/2161-0703.1000e108

ase published in different countries. In the globalized world, the observation of the interactive timeline of any infection can contribute to the design of global models of spread of infectious diseases and collaborate to prevent future epidemics [19].

The effective scholarly communication of results is central to scientific research. The social Web is allowing a much more interactive scholarly communication and has opened a world of possibilities to create, evaluate, and disseminate scientific knowledge.

In the Science 2.0 era, researchers can publish preprints in online archives or post their papers on web pages. Data, comments, scientific experiments, and blogs can now be shared and considered a form of scientific contribution that can help other scientists in their work. However, some areas of scholarly communication present new challenges to be solved. Thus, improved measures of impact of an article, usage statistics or article-metrics comparable to ISI citation, and the impact of open access self-archiving are some important issues that clearly need further study.

References

1. Carey J (2011) Faculty of 1000 and Vivo: Invisible Colleges And Team Science. Issues in Science and Technology Librarianship.
2. Putnam L (2011) The Changing Role of Blogs in Science Information Dissemination. Issues in Science and Technology Librarianship.
3. Rebiun (2011) Science 2.0: Application of the social web to research. Revised and updated edition.
4. Rollett H, Lux M, Strohmaier M, Dösinger G, Tochtermann K (2007) The Web 2.0 way of learning with technologies. Int J Learning Technology 3: 87-107.
5. Ware M (2006) Overview of STM journal publishing.
6. Rowlands I (2007) Electronic journals and user behavior: A review of recent research. Libr Infor Sci Res 29: 369-396.
7. Tenopir C, King DW (2007) Engineers and scholarly journals: reading patterns in the electronic era. TR News 251: 24-27.
8. Tenopir C, King DW, Spencer J, Wu L (2009) Variations in article seeking and reading patterns of academics: What makes a difference? Libr Inf Sci Res 31: 139-148.
9. Shotton D (2009) Semantic publishing: the coming revolution in scientific journal publishing. Learned Publishing 22: 85-94.
10. Björk B, Roos A, Lauri M (2008) Global annual volume of peer reviewed scholarly articles and the share available via different Open Access options. Proceedings of the ELPUB2008.
11. Falagas ME, Papastamataki PA, Bliziotis IA (2006) A bibliometric analysis of research productivity in Parasitology by different world regions during a 9 year period (1995-2003). BMC Infect Dis 6: 56.
12. Keiser J, Utzinger J, Tanner M, Singer BH (2004) Representation of authors and editors from countries with different human development indexes in the leading literature on tropical medicine: survey of current evidence. BMJ 328: 1229-1232.
13. Langer A, Diaz Olavarrieta C, Berdichevsky K, Villar J (2004) Why is research from developing countries underrepresented in international health literature, and what can be done about it? Bull World Health Organ 82: 802-803.
14. Alperin JP, Fischman GE, Willinsky J (2008) Open access and scholarly publishing in Latin America: ten flavours and a few reflections. Liinc em Revista 4: 172-185.
15. Laakso M, Welling P, Bukvova H, Nyman L, Björk B, et al. (2011) The development of open access journal publishing from 1993 to 2009. PLoS One 6: e20961.
16. Björk BC (2011) A study of innovative features in scholarly open access journals. J Med Internet Res 13: e115.
17. Arunachalam S (2003) Information for Research in Developing Countries: Information Technology – Friend or Foe? Intl Inform & Libr Rev 35: 133-147.
18. Bourne PE, Clark TW, Dale R, de Waard A, Herman I, et al. (2012) Improving the future of research communication and e-scholarship. Dagstuhl Manifestos 1: 41-60.
19. Shotton D, Portwin K, Klyne G, Miles A (2009) Adventures in semantic publishing: exemplar semantic enhancements of a research article. PLoS Comput Biol 5: e1000361.