
Promotion of scientific literacy and popularization of science with support of libraries and internet services

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Introduction

- Science - an important role in **development of society** and in understanding its developmental complexities
- **Scientists** are in constant interaction with scientific information
- **Ordinary people** do not always understand scientific concepts: they should become **scientifically literate**
- They will be able to:
 - Understand how scientific information has been established;
 - Under what circumstances is scientific knowledge reliable, and
 - How agreement of knowledge is maintained



Scientific literacy – brief history

- The development of modern concept of scientific literacy can be traced back to the period **after the World War II**
- The first concept of scientific literacy appeared in **1950s** - public debate about the aims of science education in society
- **Rapid development of scientific enterprise**, which initiated interest for scientific education
- Since then, **scientific literacy became a part of many education programs** around the world



The importance of scientific literacy

- Science **improves our lives** and influences our decisions
- Science-literate individual:
 - Possesses a **basic vocabulary of scientific concepts** and terms,
 - Possesses **knowledge of the processes of science** utilized to test models for making sense of the world,
 - Knowledgeably **participates in and contributes to worldly affairs** where scientific literacy is required
 - Scientific literacy is a **prerequisite for citizens to make informed decisions and be informed consumers** (globalization of society and economies requires one to understand science and technology)



Scientific literacy – more closely

- One of the digital age literacy skills:
 - basic literacy,
 - **scientific literacy,**
 - economic literacy,
 - technological literacy,
 - visual literacy,
 - information literacy and multicultural literacy



Scientific literacy – more closely

- It is **the level of understanding of science and technology** needed to function as citizens in a modern industrial society (Miller)
- It is **knowledge and understanding of the scientific concepts and processes** required for personal decision-making, participation in civic and cultural affairs, and economic productivity (National Science Education Standards)



Scientific literacy – more closely

- Scientific literacy entails:
 - **Being able to read with understanding articles about science** in the popular press and to engage in social conversation about the validity of the conclusions
 - **The capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions** in order to understand and help make decisions about the natural world and the changes made to it through human activity
- Scientifically literate person can ask, find, or determine answers to questions derived from curiosity about everyday experiences



Libraries and scientific literacy

- Libraries - **rich experience in providing access to various information resources**
- Libraries and librarians are **actively involved in the teaching process** on all levels of education
- **Preparing students** to understand most important concepts of different types of literacy, including scientific literacy
 - introducing scientific material kept in every library in different formats, including digital formats
- **Digital culture is expanding rapidly**, and libraries and librarians are already part of these developments
 - expertise in knowledge organization and knowledge use as well as scientific material they own or to which they offer access



Libraries and scientific literacy

- **Teaching how to use and understand scientific materials** – development of a “scientific attitude of mind”
- **Development of a practical problem solving ability** - essential for improving the individual’s ability to cope with everyday life
- **Training powers of observation**, providing an ability to see patterns in the plethora of data that confront us in everyday life
- **Employing social marketing skills to influence social behaviors** and promote acquisition of scientific literacy for the benefit of the general society
- To facilitate access to scientific material, libraries **use social media i.e. selected Web 2.0 tools.**



Promoting science and scientific literacy with support of the Web 2.0 internet services

- The internet is currently **the fastest medium used for dissemination of all kinds of information**
- Scientific content is also available online in form of **journal articles, newspaper articles, conference papers, books, texts in encyclopedias, in form of a text on personal Web pages, on portals, wikis, in blogs, tweets on social networks etc.**
- The Internet provides **virtually unlimited space**
- **Scientists** themselves and other categories of users of the internet **can access available scientific material** by using some of the most popular **internet services**



Social networks

- **Interpersonal communication between scientists** working together on some important projects
- **Promotion of scientific discoveries** to the wider audience
- Popular among younger generations of the internet
- Scientists in **cooperation with educators and librarians** - promotion of science by creating Web pages and profiles on popular social networks
- The downside - users of social networks profiles are **outnumbering scientists, professors and librarians** and this might lead to their work **fatigue and giving up** from active participation in communicating scientific knowledge to interested users.

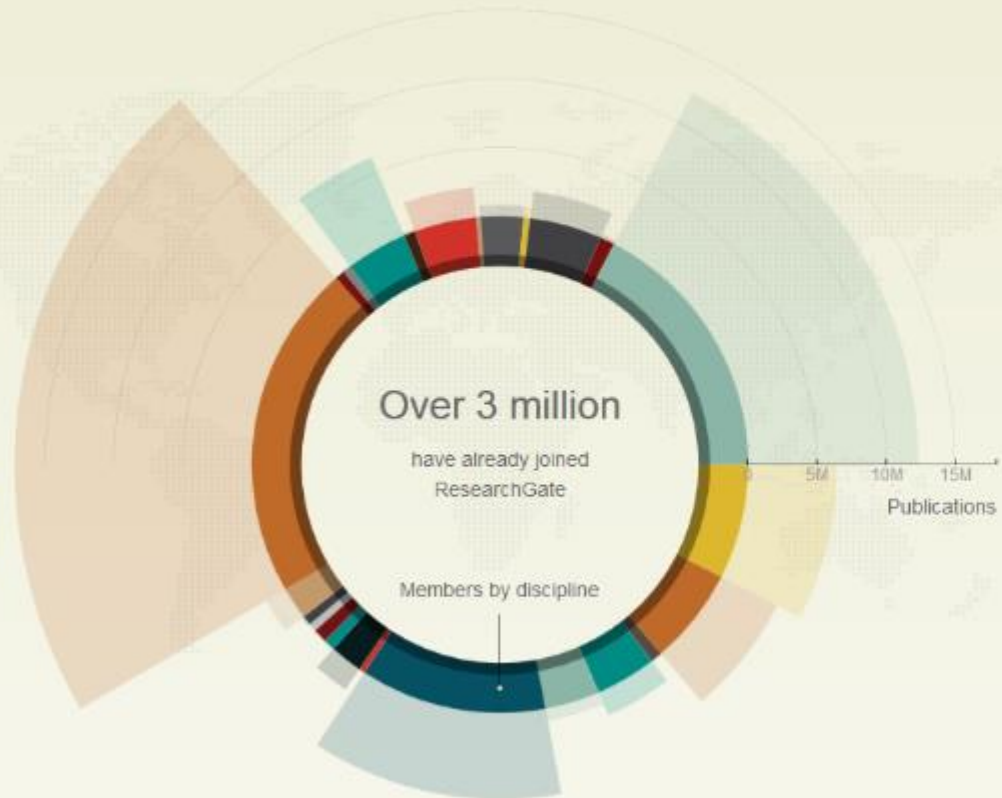


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Wiki

- Users exploit wikis to:
 - Learn knowledge organization principles,
 - Elaborate their scientific discoveries, and
 - Properly attribute their own ideas and ideas of other people they used in their research projects
- **Easy to create and maintain**
- **Scientific wikis are popular in dissemination of scientific knowledge** and they are more accurate than public wikis because they have higher barriers to editing than public wikis



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Writing
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Publication
Each article undergoes **scholarly peer-review** and, if accepted, is published.

Curation
As the field advances, **an expert curator vets article revisions.**

Established faculty and researchers

- Disseminate:** share your expertise with a global audience
- Pioneer:** write the first persistent **online review** in your area of specialization
- Steward:** **supervise** the development of articles in your field

Students and writers

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- Learn:** gain experience with scholarly writing and editing
- Publish:** transform your writing into a peer-reviewed article

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Blog

- Blogs allow people to **express their opinions** and post comments on specific subjects
- Blogs expand instructional time
- They are designed to accept user comments to encourage and facilitate exchange of ideas
- The internet offers many **professional science blogs created by learned societies and famous scientists**
- Keeping a blog up to date is a very serious task





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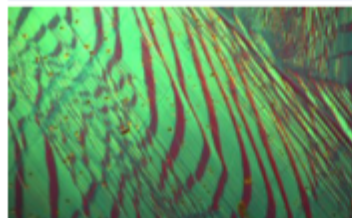
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Web portals

- Ubiquitous **access points to scientific news** as well as **to full text scientific documents**
- Quality of the content depends on the quality of professional engagement of authors and editors
- Portals are **used easily** and do not require additional knowledge for successful access to scientific content on the portal
- Portals offer **updated information** from different scientific disciplines thus helping students to stay current with the new scientific discoveries



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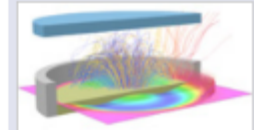
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Conclusion

- Today's science is oriented to the functional aspects of science/technology, human welfare economic development, social progress, and the quality of life
- To understand its concepts, citizens must be scientifically literate
- Citizens should start their science education as early as possible and continue their education throughout their adult life
- Libraries can help different categories of people to get acquainted with scientific research output – use of Web 2.0 services
- This would help students and other categories of library users to become scientifically literate citizens of the global society