Scientific communication in different contexts and media

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Abstract

The purpose of this article is to show how to develop information strategies in different contexts and media in the environment of scientific communication in the digital age, particularly, under the conditions of web media and its role in museum activities that can influence the decisions made to promote the democratization of knowledge and to support lasting relationships among science, technology and society. It is argued that the construction of communication and the use of information in different contexts and media requires organizational communication strategies. These are able to manage and to make the information available in different media, in the analyzed case, the museums. These are also able to establish relationships between motivation and the interest in information retrieval. These technologies include virtual reality, virtual spaces, database, information systems, graphic computer, digital image processing, expert systems, knowledge representation, information organization and information retrieval. Considering the scientific communication, this paper aims to reflect on the information strategies of appropriation in the context of site media museums. This depends not only on coordinated work between computer professionals from different areas for the implementation of systems, but also on the capacity of professionals of information science and applied social sciences to overcome differences and to find solutions on the role of technology in creating processes and the use of information in the cultural background. This proposal includes revealing how the images of widespread spaces by virtual means, through social networks can minimize such disagreements.
Introduction

The development of Information and Communication Technologies (ICT) enabled an expansion of interaction and intermediary field between users reporting mechanisms in various areas of knowledge. Currently, access to networks, equipment and mastery of skills related to information and communication technologies is a requisite for social integration.

In Brazil 85.6 million people 10 and older accessed the Internet in 2013. So, 48% (31.2 million) of all households had access to the network, and 42.4% (13.2 million) accessed by the microcomputer, and 3.6 million (11.6%) by other means. In addition to these and other risks are Internet access, television and cellular phone possession for personal use of the National Survey by Household Sampling - PNAD 2013, released by Brazilian Institute of Geography and Statistics (IBGE) in partnership with the Ministry of Communications.

The statistical results presented are an important source on the use of ICT by people supporting thus the national planning and public policies for technological development of the country.

The access to information and its use has been consolidated as a major element for economic and social development, as well as a condition for the exercise of citizenship.

One of the goals of the democratization of the access to information is to promote the development of the individual, his group and broadly to the society according to Barreto (1997).

The need for the dissemination of knowledge, seeking the common welfare directs studies to the understanding of the knowledge transferring process. The information becomes a factor that relates the knowledge to human development, because of new technological models Aun and Câmara (2005).

The use of technology is focused on technical planning as well as on organizational processes, management and information retrieval. On the other hand, there will be a symbolic dimension, full of meanings and subjectivities in contrast with the objectivity of the technical use.

The establishment of information channels increasingly large and comprehensive is of fundamental value to maximize the social responsibility of the Science paper. Then, the degree of accessibility can make the information on the science an essential factor in respect to their informational efficiency. The information, as well as scientific communication in the digital age, must be a key part of the framework of the institutions responsible for the dissemination of knowledge.

1. http://www.ibge.gov.br/home/estatistica/populacao/acessoaointernet2013/default.shtm (access on
The purpose of this article is to show how to develop information strategies in different contexts and media in the environment of scientific communication in the digital age, particularly, under the conditions of web media and its role in museum activities that can influence the decisions made to promote the democratization of knowledge and to support lasting relationships among science, technology and society.

It is important to stress that if on one side it is necessary to build strategic communication to maintain excellence in science communication, aiming the user imagination on virtual environments, however, it needs to create relationship ties with professionals from the fields of innovative technologies related to three-dimensional simulation, information systems, database, anticipating reactions and validating interpretative analysis of the role of science in the knowledge society.

In reference to the museum, the establishment of relations between the museology field professionals and professionals from the fields of knowledge of Information Science and Computer Science, as well as scientists from other fields of knowledge enables the creation of techniques and strategies to deal with the object museum in various ways.

For instance, visiting a web site, consulting a CD, providing images of scientific laboratories, scientific experiments on virtual social networks, simulating environments and three-dimensional objects, immersing in editing Islands with tours on the virtual world, exploring new ways and sensations through new features, perceiving reality through the virtual, which is a powerful tool that can change the object and its relationship with memory and the imagination.

Scientific Communication in Virtual Environments

An important issue to be reflected is to what extent scientific communication in virtual environments helps to minimize a crucial issue regarding the dissemination of science, the dissemination of scientific activities. The problem is to present the way of how to do science, how scientists conduct their discoveries, which are the paradoxes of science, because citizens must trust and mark out the science so they can continue to live in society.

Science and technology can and should be partners for the dissemination of scientific knowledge. Whether for a lay audience, whether for scientific communication between scientists.

The museums of various types seek to develop information strategies through the web, in the context of scientific communication in order to put citizens in a position of questions about science, technology and society.

According to Baracho and Barbosa (2011), there are currently technological resources that go beyond what has been used, capable of transpose and change the current settings of museology in all its context. With the ease of access to information, Science Information search results are increasingly determined for the organization and information retrieval on virtual environments.

The result of researching on Portuguese museums examines how technologies expand the distribution of resources and the dissemination of information, such as attending to a cultural demand in museological spaces, moreover, it highlights that museums, when inserted into the technological perspective, can exceed their limitations and allow the web to provide an "infinite" framework of knowledge, guided by virtual reality and the set of available tools (PEDRO, 2010).
With the invention of printing by Gutenberg in 1439, people started to expand access to information. In the late twentieth century, the Internet has become one of the means to disseminate a significant amount of information. Since the 1990s, the computer network has been used by museums. The first conference of museums and the Internet was held in 1997 in California, entitled "Museums and the Web" by checking the growth of research related to the theme. When you consider the use of the Internet by the museums it can be related to one way of spreading the contents of their communication actions of science, culture, education, their collections, their research missions, and also the exhibitions.

It is worth thinking of information about museums on the web as a multitude of interfaces that relates allowing multiple readings of museological actions, aimed at the dissemination of scientific knowledge. Readings that occur in the interaction of the citizen who is a visitor and a user of the websites developed by museums. Or even blogs that discuss about museums and the scientific knowledge. It starts from the assumption that the information about museums on the web is characterized as a speech, a conceptual proposal that even has a chance to produce and to disseminate knowledge such as exploring new forms of mediation through technology.

Examples:

Rosane Maria Carvalho Rocha (2012), presented a research about the museums and the web. That are studies of national and international significance, both relate to academic productions, thesis as in referring to newspaper articles, investigating what's available on the network to the visitor - user of museums and cultural heritage. From the analysis of the collected studies and newspaper articles, the author concludes that "the museum websites are expanding and becoming available ever more by physical museums to give access to their collections gaining greater visibility, retaining their audiences and attracting new segments.

The sites and blogs of museums, the available videos made by other institutions, not necessarily museums, are virtual environments where the ideas circulate. It is worth remembering that their public character, encompasses a heterogeneous visitor - user framework.

The websites as communication strategy of museums for science communication

Because of its dynamic nature, the museums and websites or blogs, sites that publish museums are configured as a way of exposing the knowledge generated in the Museology and Museum field. Daniel MV Souza (2009), in his closing remarks article, Information and Knowledge Construction in the Horizon Museológico clarifies:

The museum is not organized around the structure of an informational system, covering emphatically issues related to retrieval and dissemination of information with a view to build knowledge, it remains the social reality in which it appears, and contributes further to delineate regular practices of exclusion. Not enough, however, the museum document and exposition.
In this context, the subject in his individuality is the visitor of the web sites of museums. It is the visitor who realizes and scrolls through the interfaces of web sites, and who uses the menus to make the choices.

It is in this aspect that the article reflects on the website of museums to science communication. Furthermore, museums seek greater creativity in the website interface to attract visitors and to arise greater interest in scientific issues to expose interactive science experiences, and to discuss issues about technology, health, environmental heritage, etc. On the National Museum of Natural History of Paris website, for example, there is on the menu- a channel that shows videos about different scientific contents.

![Website Screenshot](https://www.mnhn.fr/fr)

Source: site MNHN- Paris (https://www.mnhn.fr/fr)².

Progressively more present in people's lives, such as, tasks, how to organize and to connect information, how to identify navigation paths, or to create tools and rules to organize the information created and disseminated in collaborative environments, adding spaces, information

² (https://www.mnhn.fr/fr). access January 11, 2016. 18:50 pm
architecture starts to work and to gather with other disciplines such as usability, graphic design, interaction design, etc. (DING AND XIA, 2010).

The Research on Brazilian museums websites

In 2011 and 2012 the authors of the paper conducted a research on the students Museology course of Minas Gerais Federal University with the objective of analyzing the websites and blogs about museums. How does the visitor - user interact with the websites and blogs that the museums have? Issues related to the interface, aesthetics, navigation on the site, the textual information (syntax), to technological resources, the museum object, the museum displays and, particularly, relevant for future analysis, issues related to the user satisfaction, the specific interest of the field of museology.

The research was published on the Annals of the XIV National Meeting of Research in Information Science (ENANCIB 2013).

Ten Brazilian museums were selected from the site Brazilian Institute of Museums (IBRAM), there was an access to each site, in order to validate the email address provided on the portal page. The Museums analyzed were: the São Paulo Museum of Art, Person Museum, Museum of Conspiracy, Portinari House Museum, Museum of Image and Paraná Sound, Mariana Music Museum, Bahia Museum of Archaeology and Ethnology, USP Archaeology and Ethnology Museum, Rio de Janeiro Modern Art Museum, Carlos Costa Pinto museum.

It was developed a tool to collect data consisting of 25 closed questions, eight mixed questions, seeking further details of the insights explicit in the closed part of the question.

There are a few examples of some questions of the tools: Could the site open easily? Did the aesthetics of the site have a nice and harmonic presentation? Why? Have you got lost at some stage of the website navigation? What about when looking at the main page? Which one of the first point that has got your interest in surfing on the internet? Why? Was navigating the site a pleasant process? Did you get involved in navigating? Have you considered it easy to navigate on the site? Were you able to return to the home page easily? Was the text prepared on a manner that facilitated the reading process? Has the site caught your attention to some specific interest in the museology field? Have you ever been physically in this museum? Have you navigated on this museum website before?

The experiment was conducted in the information technology laboratories of the School of Information Studies of UFMG, with undergraduate students of the museology course. After an experimental exposure of its objectives, and having received the consent of the students in participating, a list of museums was presented to them which had been previously selected followed by their email addresses. Then they could access it via internet to complete it later with the collection data tool. It was distributed in an electronic format in the form of a file having .doc as an extension allowing it to be opened on word processing programs easily found (proprietary or open source) such as Microsoft Office, Libre Office, Open Office, among others. As the addresses accessed electronics and sailed in each site related to museums, a form to that museum was completed allowing the recording of impressions of each museum.
The Researches that have been found and are relevant to the purpose of this article: The interest in visiting the museums that were not visited physically, from the visit held in virtual-space Websites, due to the interactivity presented by the interfaces of the websites, the ease of usability of the website, the aesthetic dimension, so the harmony between content and form available on the websites enable efficiency in mediating involving Websites of museums and the user.

**Final remarks**

This is an emerging area of research when considering the Websites of museums as a scientific communication strategy used by museums to popularize science. To develop a study to map, typify the website museums, mediating with citizens enables forecasts in relation to the architecture of information and scientific communication, web mediation and museum audiences.

The effects of the mapping about the museum website for scientific communication are significant, especially in decision-making to promote the democratization of knowledge and lasting relationships among science, technology and society.

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