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Virtual Reference Services

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Abstract

Analysis of virtual reference services, their standards and new technologies that have changed the traditional practice at the library's reference desk. Major American virtual reference services initiatives and their characteristics are described.

Keywords

Virtual reference services; Digital library; Information technology; Digital reference; Reference librarian; Electronic mail.

INTRODUCTION

The objective of this paper is to present the current virtual reference services existing overseas,, mainly in the United States of America, and to identify the characteristics of the major initiatives developed up to the present moment. On account of the fast growing literature about this subject, this paper intends to formulate a set of themes of research related to a type of specific service of libraries on the Internet. The paper includes concepts, norms, data and descriptions of this type of services.

DEFINITION OF THE VIRTUAL REFERENCE SERVICES

The digital libraries have been conceived only as collection of digital materials which can be accessed by remote users, but the new software designed to create collaborative networks of libraries show that the concept can embrace the access to virtual services (Meola, 1999). Some time ago, in the discussion list of IBICT virtual library (http://www.cg.org.br/gtbv/lista.htm), a doubt was aroused about the quality of the reference services which the libraries make available on the network. My answer at that time was that in Brazil there are not services like the ones found in the sites of the main American libraries. In the beginning of 2001, none of the 184 Brazilian libraries registered by IBICT in the Working Group of Virtual Libraries (http://www.cg.org.br/gt/gtbv/alfabetica.htm) held reference service which would operate 24 hours a day and having a selective distribution of the type of consultation.

Overseas, there are, on the network, hundreds of consultation services which receive a large volume of questions per day. Services like Ask Jeeves (http://www.ask.com) and WebHelp (http://www.webhelp.com) are operated by enterprises which comply with the demand of clients and observe the financial interests of their investors. On the other side, there are the digital reference services "AskA", which are not commercial, funded by research centers, and used by students, parents, educators and other people to communicate with experienced professionals of librarianship area, and to be guided towards better sources of information as well as specialists of all the areas of knowledge. When this service is operated by a library, it has as a characteristics an optimization in the quality of the answers, in the type of professional responsible, and in public for whom it is being oriented (Coffman, 2000). The reference services of libraries with well trained librarians use and assess the tools and resources on the network for optimization of the results (Sullivan, 2001).

Presently, many of these services consist of consultations sent via e-mail, telephone or forms on the Web, taking time and requiring a hard work of research. Most of the time, the long process consists of the commitment of effective exchange of resources and information which allow collaboration among several types of reference services.

The virtual reference services are becoming a reality and are an active part in the evolution of the library services on the Internet. In the beginning of 2001, the first Library of Congress symposium took place, and its objectives were to discuss the concepts and implementations of the virtual reference services (http://lcweb.loc.gov/ala/digiref.html). Professor David Lankes, from Syracuse

University's School of Information Studies, pointed out the present status of those services. He quoted a study which states that 97.3% of the American university libraries have already some kind of digital reference service, defined as as "mechanism through which people can send questions and get answers via e-mail, chat or Web format" (Saunders, 1001).

An evidence of the increase in the interest in the area of the electronic reference services can be seen by what happened during the last meeting of the American Libraries Association (ALA) em 2000, in Chicago, where just a few libraries had projects of virtual reference; whereas, during ALA's January 2001 meeting, there were 65 libraries using the LSSI software (http://www.lssi.com/virtual) for virtual reference and half a score using other programs, such as **Live Person, eShare** and **HumanClick**. Presently, the subject "virtual reference" is included in many events of this area in the United States and is theme in specialized fora, as for instance, the discussion lists Dig_Ref Listserver (http://vrd.org/Dig_Ref/dig_ref.html) for people and organizations interested in this subjec held by Virtual Reference Desk Project, and in the list Live Reference Listserver (livereference@egroups.com). The present concern of these researchers refers to its institutionalization and establishment of technical standards and regular quality and also in the development of software which may be used both in reference service in real time and asynchronous reference.

CHARACTERISTICS OF THE SERVICES

The virtual reference services via electronic mail came up in the United States in the end of 1980, at the same time as the libraries began to place their catalogues on the Internet. Some of these catalogues enabled the remote users to ask their questions through links which allowed the request of a document consultation. As the **Ask-A-Scientist** and **Ask-A-Volcanologist** services, which received questions via specific e-mail on an area of science, the **Ask a Librarian** service has been on the Internet for some years and it is easy to be accessed by motors of search when someone asks a question. The libraries reference departments establish that service as a link in the library home page, allowing a great increase in the number of consultations. Often the service which was only addressed to a specific academic community was, receiving messages from different parts of the world. Services as **Google, Fast** and **Altavista** are mentioned as promoters of that type of boom in the use of virtual reference.

On the Internet there can be found libraries which offer reference services in real time via access to database,, telephone, e-mail, Web form, videoconference, “Internet chat”, FAQs and Mural pages.

The reference services, also called Ask-Na-Expert (AskA), are the opposite of static pages, and have as objective to develop essential attitudes in their users (Kasowitz, 1998). The persons who render digital reference services are specialists (volunteers, guides, librarians and others). They can be called information specialists because they perform the same kind of work similar to that carried out in physical (traditional) library. Some of these services have a specific public, as for instance the KidsConnect, for high school students, others aim at the teachers of those students, as the AskERIC. Others offer specific information about a subject to all kinds of public, as MAD Scientist Network. Presently, these reference services offer two kinds of speciality, information on practical themes and instructive reference information.

Types of Support and Functioning

Several libraries are carrying out testing services of messages of instantaneous e-mail, called “Live Help”, which provide support to research and navigation for the user of libraries on the Web. The programs shall be evaluated as pilot projects to test their efficency for the immediate answer and whether they will meet the needs of the type of information required. An example is the NCI Information Specialists, which gives support to the service “Live Help” of the National Cancer Institute with information about cancer, giving no consultations, but giving assistance to the persons who navigate in their site. The Home page address with the pilot service is http://cancer.gov/livehelp/beta/phase2.html. The project promoters keep the users updated with changes in the service and welcome any suggestions from the participants during the testing period.

The reference service via telephone has been traditionally used by libraries as the best form to offer their services to remote users, but the cost can be very high in the case of long distance calls. The reference service via electronic mail has the same advantages, in addition to allowing sending and receiving information at a more convenient time for the user. Other advantages of the electronic mail, used as reference service, are anonymity and allowance to have the whole process of consultation and research results printed.

On its part, the reference videoconference, which came up on the Interactive Reference Service of University of California (http://www.ala.org/paperhtm/a10.html), has lately shown the need of new label rules for communication between the users and the staff in charge thereof; the efficent technological support of this last group is essential for the functioning of the service on real time. Presently, the use of teleconference technology is considered as fundamental for the development of digital collections and services (Lessik, 1997).

One characteristic that stands out in these projects is the one of the reference librarians on-line who are specializing in the use of technologies and reference work existing on the network. The server profile and tasks or the new reference librarian come up characterizing a type of professional who no more carries out his work using only paper works, opacs and bases in cd-rom. One good example is Gary D. Price, Virginia Campus Library, George Washington University, who prepared a site having links for the most used consultation works in the area of reference (http://gwu.edu/~gprice/handbook.htm) and for some databases "hidden" on the network (http://gwis2.circ.gwu.edu/~gprice/direct.htm). Those initiatives are usual among librarians responsible for libraries sites. Iowa State University has a real-time librarian, Gary McKiernan, specialized in digital reference in real time "_LiveRef(sm)". He has identified libraries which offer services of this type (http://www.public.iastate.edu/~CYBERSTACKS/LiveRef.htm). It is also the page of a librarian on the Internet that has the most complete bibliography about reference services (Sloan, 2000).

According to Kasowitz (1998), the role of the information specialist in reference is not only that of offering answers, but also preparing users and students of all levels to effectively solve their needs of information and help to arouse a critical thought about their research sources.

Software

According to Zick (2000), the librarians are quite concerned with the future of their profession, thinking that they can be replaced by the "intelligent systems". The information professional has to work along with those intelligent systems pursuing the same goals: to dynamize the collaboration among agents, to enrich the user and standardize information for a specific type of public. Lately, the interoperability of the software for virtual reference services has been discussed, mainly on account of the increase in new systems of electronic mail and interactive software in real time. Some of the most used

software are as follows: Humanclic, LivePerson, AOL Instant Messenger, AOL AIM Express, Camden, LiveAssistance, Webmaster. The Library of Congress (1998) mentions the following software as a new generation of on-line reference: EBSCO's Collectanea (http://www.collectanea.com), ISI's Web of Science and the ones of OCLC (Online Computer Library Center): Webline, FirstSearch, SiteSearch and FirstSearch Electronic Collections Online (http://www.oclc.org/oclc/promo/7775os/reference.htm).

The interactive software used for the so called chats and Instant Messenger, although they are very popular on the Internet, they are not frequently used by the libraries because of the complications that they present both for their configuration and their functioning. Presently, with the new Java browsers which allow the chat programs to be integrated into the web pages, they are becoming an intermediate between the reference via electronic mail and the videoconference (Meola, 1999). Software as Microsoft NetMeeting and NetShow, the Daedalus, Group Wise, Web Publisher, Norton Connect Net and Reilly WebBoard are being used by American school libraries, because they are well known among the students. Some authors, as for instance Morgan (1999), believe that the videoconference can be cusedsuccessfully in the digital reference, because it is a technology and media of alternative communication. The librarians have only to obtain the necessary hadware and use programs as CU-SeeMe, allowing access to small groups of users, also enabling distant education. There are several experiences with this type of software on the Network (Folger, 1997).

Norms and policies

For many years the reference services have been informally managed, although there are norms and policies for them in the libraries, but not applied to their virtual versions (Sloan, 1988). According to Bernie Sloan, the development of policies and standards for this area should take into consideration its administration, users, personnel, infrastructure for the services, costs and evaluations.

The reference services via telephone have followed the same type of policy for their functioning: to solve the problems regarding the needs of information from the one requesting, during the time the call lasts, but frequently it is not observed because of the large amount of demands and the limited time of service. On the other hand, the reference servi via electronic mail, from its very beginning, has followed two standards established in 1982, the RFC 821

standard Simple Mail Transfer Protocol and the RFC 822 Standar for the Format of ARPA Internet Text Messages, which refer to appropriate extension of the messages and the content allowed (Philip, 1997).

With the increase in the reference services, implemented by the libraries overseas, it is important to note that the emphasis on the development of measures and standards is not accompanying that increase. The digital libraries are starting to create a series of standars to effectuate the quality of their services. According to McClure (2001), first of all, it is necessary to understandthe nature of the quality of the reference service, which is inherent to its role as a guide to users of information resources. The evaluation of those services is fundamental for their planning (personnel, equipment costs etc.) and mainly for assuring that the user will have their needs of information covered.

The establishment of policies for sending e-mail is one of the first steps for setting up a digital reference service. An example of virtual reference service is the one created at Drexel University by W. W. Hagerty Library (http://www.library.drexel.edu/services/refquestion.html), wherspecialists are listed according to the area of knowledge with their e-mail addresses, so that the students and teachers may contact them directly. University of Illinois, at Urabana Champaign, also has a site with links for over 90 university libraries, with Ask A Reference question services, all having their own policies for sending e-mails (Sloan, 1997).

Initiatives

The first on-line reference service, in the world, functioning 24 hours a day is North Carolina State University's Virtual Reference Service (http://www.lib.ncsu.edu/libref/). Whereas the first cooperative project of reference among university libraries took place in Illinois State, involving 14 libraries: The Alliance Library Project. The project has plan of evaluation where methods and techniques used are discussed, seeking a new approach for the functioning of on-line reference (http://www.rsa.lib.il.us/ready/about.htm). Also, as part of the project, a plan of marketing was incremented which shows the strategies to be analyzed within the on-line reference service.

Cornell University Libraries also provides an afterhours reference service based on the use of live virtual reference technology (http://campusgw.library.cornell.edu/services/ask.html). The institution has developed a plan

for 2000-2002 which includes the idea that the users shall have access, 24 hours a day, during the seven days of the week, a reference service of quality, wherever they are. In the years 90, Cornell University Libraries started the reference via e-mail, with on-line tutorialsand videconference; since last year, they have offered LiveHelp using the LivePerson software, which requires only a connection in the network and browser. This service is being preferably used by graduation students.

The Library of Congress has developed collaborative partnership called Collaborative Digital Reference Service (CDRS) (http://www.loc.gov/rr/digiref) together with other libraries, free of charge, with the only commitment of making part of the personnel of each library available to reply to at least 10 questions a week and also allowing sending the questions to CDRS. The purpose of CDRS is to provide specialized reference services to users, in any place, at any hour and through an international network of digital libraries. The infrastructure to support the system includes agreement of operation, descriptions of the services and software used in follow-up and management of the question and answer routine, as the Library of Concress is building databases with the users' profile and bases for the most frequent questions and answers (in partnership with OCLC – Online Computer Library Center). For Library of Congress, the contribution CDRS has been offering for the increase in importance of libraries in local communities, is already recognized.

The initiative of Library of Congress, which at the present moment is in the third Phase with over 50 paerticipating libraries, actually meets a needs of users of libraries on the Internet from the whole world, who wish an accurate and quick reference. This is already a reality for a lot of universities of English language which share the consortium EARL (UK Public Library E-ref consortium) (http://www.earl.org.uk/ask), which includes request management system, through which, anyone in the United States who sends a consultation at three o'clock in the morning, when the nearest library is closed, can have his question answered by a member of the consortium in Australia in real time (Ormes, 1998).

The consortia of libraries have been settled as a route for the establishment of faster reference services. An example is the 24/7 Reference Project (24 hours and 7 days) of Metropolitan Cooperative Library System, sponsored by Federal LSTA and administered by California State Library (http://2www.247ref.org). The Webline software is accessed via Web, using applicatives in Java, needing only for connection on the network a browser

IE5.0 and no less than 64Mb of memory and a 200Mhz processor Pentium or faster. The project has already included 40 participating libraries and a network of specialistper area, with construction of FAQs and testing of each integrating part of the reference process. The result of one their tests pointed out the need for incrementing the degree of informatics knowledge of the librarians and the beginning stage where the reference via chats is encountered. Santa Monica Public Library (http://www.smpl.org/library) is an example of a library participating in consortium which has been carrying out studies about how to adjust its interactive reference services and real-time needs of its users. It also participates in the CDRS project and keeps carrying out the work of evaluation of reference interview via e-mail, being one of its pioneers since 1989.

A result of other consortium is the Virtual Reference Desk (http://vrd.org/about.html). It is a project dedicated to the improvement of reference services and the creation and operation of information services based on Internet with human mediation. The project, sponsored by the United States Department of Education supported by the White House Office of Science and Technology Policy, was launched as a cooperative reference service, in January of 2000, with 18 services of AskA and 28 volunteer information professionals. In the beginning of 2001, there were 54 volunteers and several new services of AskA were added; they are practically public, university and school libraries, as well as librarianship students as trainees within the project.

The project offers technical support to the participants – users and system administrators of each institution where the software is being used. The AskA Consortium is set of organizations which are part of the project and carries out studies jon the standards of interoperability, metadata and other aspects of the AskA service (http://www.vrd.org/Tech/QuIP/index.html). The following entities take part in the Consortium: Ask A MAD Scientist, AskERIC, Internet Public Library, Morris County Public Library (NJ), National Museum of American Art, Library of Congress's American Memory Center for School Safety and Eisenhower National Clearinghouse for Mathematics and Science Education.

The VRD project, in addition to connecting libraries with AskA services (AskA Volcanologist, Ask Dr. Math, Ask Shamu, AskERIC, Ask A MAD and others), promotes annual conferences (VRD, 2000 Conference Proceedings) and puts out publications about the topic and a manual *AskA Starter Kit* (http://vrd.org/training.html). One of the first manuals for virtual reference was elaborated at Library Systems & Services LSSI (http://www.lssi.com), by Anne

Lipow and Steve Coffman; its preliminary version was launched at the last ALA meeting. The title of the Manual is *Establishing a Virtual Reference Service: VRD Training Manual* (http://www.library-solutions.com/vrd.html). It was initially developed by Bay Area Library Project, which uses software for Virtual reference of LSSI, but presently it used by over 70 American libraries. It has guides for organization of any kind of reference service based on direct contact via web using that software. Here are some of the topics of the manual: preliminary view of the software, planning of the on-line reference services, services, policies and methodologies, training, design and content of the screens and exercises about how to use the software. Anne Lipow is pioneer in this area, and her articles always describe themes referring to the relation user-librarian of reference and to the importance of their role in the digital era (Lipow, 1999). The proposal is that the manual should be updated three times a year, for adaptation to the changes and the users needs.

At last, it important to quote here the AskEric (http://www.askeric.org), a virtual reference service developed by ERIC Clearinghouse on Information & Technology/Information Institute of Syracuse, academic community-oriented, having information on education for teachers, students, guides, administrators and family parents. It has a collection of 3 thousand information resources compiled by its expert team, alphabetically organized (http://ericir.syr.edu/Search/topicsA-ªhtml). Those professionals give also assistance thourhg Ask at ERIC Expert Service (See annexes 1 and 2).

Conslusion

The advancement of information technologies and their impact on all the areas of society have yielded a need for obtaining useful and important information via specialized information sources, which are recognized by their methods to find, select and disseminate information. Libraries are being assigned to fulfull this function, because they are information systems which facilitate the simple and effective access to on-line information resources.

From the beginning, the reference services have been considered as a teaching function for the rational use of the libraries resources (Rader, 2000). To start a virtual reference service means to take into consideration how it fits into the library mission and the institutional culture, specifically its acceptance both by the management and the personnel, and the possibility to count on the technological infrastructure suitable to the project. At the present moment, there is a need, well-known in the different initiatives, of standards which

may allow interoperability of the services and the continual work of testing the different software which are being used by the libraries. The conclusion is that a first examination of the new technologies applied to reference service points out to a future reproduction, almost identical to real time, of librarian-user relationship at the counter of the reference of the traditional libraries.

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Anexo 1

Serviços AskA

Ask A+ Locator
http://www.vrd.org/locator/index.html

*** Internet Public Library Ask-A-Question Service**
http://www.ipl.org/ref/QUE/

*** Pitsco's List of Ask-an-Expert Services**
http://www.askanexpert.com/category.htm

*** All Experts**
http://www.allexperts.com/

*** ExpertCentral - A Breakthrough Way to Get the Answers You Need from Real Experts**
http://www.expertcentral.com

*** Ask an Expert -- Center for Research on Evaluation, Standards, and Student Testing (CRESST)**
http://cresst96.cse.ucla.edu/CRESST/pages/expert.htm

*** The MAD Scientist Network**
http://madsci.wustl.edu/

*** Ask Dr. Math**
http://forum.swarthmore.edu/dr.math/

*** Ask Dr. Freemath**
http://ois.unomaha.edu/drfreemath/

*** Ask A Geologist**
http://walrus.wr.usgs.gov/docs/ask-a-ge.html

*** Ask The Space Scientist**
http://image.gsfc.nasa.gov/poetry//ask/askmag.html

Anexo 2

Serviços de Referências em Chat

Austin Community College Learning Resource Services Service:
Software: HumanClick
URL: http://www2.austin.cc.tx.us./JRB/opcserv1.htm#REAL

Bowling Green State University, Jerome Library Reference Services Service

Software: HumanClick
URL: http://www.bgsu.edu/colleges/library/infosrv/hc.html

Broward Community College, University/College Library Service
Software: HumanClick
URL: http://exodus.broward.cc.fl.us/test/ask.htm

Canisius College Library Service
Software: HumanClick
URL: http://www.canisius.edu/canhp/canlib/humanclick.html

Carnegie Mellon University Libraries Service
Software: LivePerson
URL: http://www.library.cmu.edu/

Cornell University Library Service
Software: LivePerson
URL: http://www.library.cornell.edu/okuref/quest.html

Eastern New Mexico University, Golden Library Service
Software: HumanClick
URL: http://www.enmu.edu/~woodm/refchat.html

Georgia Institute of Technology, Library and Information Center Service
Software: AOL's Instant Messenger
URL: http://www.library.gatech.edu/reference.htm

Liberty University, External Degree Library Services Service
Software: AOL's Instant Messenger
URL: http://www.liberty.edu/resources/library/edp/index.html

Michigan State University's Main Library Service
Software: Netscape Chat
URL: http://www.lib.msu.edu/services/chat.html

North Carolina State University Libraries Service
Software: Netscape Chat
URL: http://www.lib.ncsu.edu/risd/libref/chat.html

Northwestern University of Louisiana, Watson Library Service
Software: Anexa.com Communities
URL: http://vic.nsula.edu/watson_library/chat.html

Pepperdine University Libraries Service
Software: HumanClick
URL: http://rigel.pepperdine.edu/

Plattsburgh State University, Benjamin F. Feinberg Library Service
Software: AOL's Instant Messenger
URL: http://www2.plattsburgh.edu/acadvp/libinfo/library/iref.html

Rensselaer Polytechnic Institute, Rensselaer Libraries & Information Services Service
Software: HumanClick
URL: http://www.rpi.edu/library/information/contact.html

SUNY College of Agriculture and Technology at Morrisville Library Service
Software: AOL's Instant Messenger
URL: http://www.morrisville.edu/library/talk.html

Temple University Libraries Service
Software: Camden
URL: http://www.library.temple.edu/ref/ask_us.htm

University Libraries, University at Buffalo Service
Software: AOL Instant Messenger and AOL AIM Express
URL: http://ublib.buffalo.edu/libraries/help/refchat.html

University of Chicago Library, Business and Economics Resource Center Service
Software: LiveAssistance
URL: http://www.lib.uchicago.edu/e/busecon/asklibrarian.html
Contact: see http://www.lib.uchicago.edu/e/busecon/aboutask.html

University of Edinburgh Library Service
Software:
URL: http://www.remote.lib.ed.ac.uk/

University of Illinois at Chicago, Library of the Health Sciences Peoria Service:
Software: HumanClick
URL: http://www.uic.edu/depts/lib/lhsp/services/helpdesk.shtml

University of Leicester, University Library, Distance Learning Unit Service
Software: HumanClick
URL: http://www.le.ac.uk/li/distance/enquiry/chat.html

University of North Texas Libraries Service
Software: ConferenceRoom by Webmaster
URL: http://www.library.unt.edu/chatroom/default.htm

University of Pennsylvania, Lippincott Library Service
Software: LivePerson
URL: http://www.library.upenn.edu/lippincott/askoption.html

University of South Florida, Tampa Campus Library
Florida Distance Learning Reference & Referral Center Service
Software: ConferenceRoom by Webmaster
URL: http://www.rrc.usf.edu/chat/index.html

University of South Florida Virtual Library
Software: ConferenceRoom by Webmaster
URL: http://www.lib.usf.edu/virtual/chat/index.html

Virginia Tech Library
Software: LivePerson
URL: http://www.lib.vt.edu/ (from middle October 2000)