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Information literacy in the Capes Portal of E-Journals: the impact of user training programs

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Abstract. This paper presents research in progress which aims to determine the impact of user training in the information literacy level of users of the Capes Portal of E-Journals. The paper starts with an overview of the Capes Portal, the largest digital library of scientific journals of Brazil, its history, evolution and of the technological alternatives for information retrieval on the web. Next, the paper presents a theoretical framework about information searching, construction of search strategies and information literacy. The research will use a qualitative approach. Data collected through observations and interviews will be categorized and interpreted using as basis the second standard of ACRL - Information Literacy Competency Standards for Higher Education.

Keywords: Capes Portal of E-Journals; information literacy, assessment, higher education, university library, user training, information retrieval, search strategy, qualitative methods.

1. Introduction

This paper reports on an in progress research study aimed at investigating the impact of training in the information literacy level of student users of the Capes Portal of E-Journals. The Capes Portal of E-Journals stands out in the scenario of Brazilian university libraries as an important information resource for providing access to current and high quality sources of information. Since 2001, the Federal University of Minas Gerais (UFMG) is one of its consortium institutions.

At participating institutions, training on the use of the Portal Capes is necessary to ensure increased, competent, effective and maximized utilization of its resources. This kind of use requires that users learn not only about how to deal mechanically with its interface, but also to understand and express their

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information needs, to know the search resources available, how to formulate the search strategy, and how to evaluate the retrieved information.
The research study intends to verify if there is a positive relationship between students' participation in the training sections on the use of the Capes Portal and their information literacy. The study will concentrate particularly on the Standard Two from the document "Information Literacy Competency Standards for Higher Education" of ACRL (Association of College and Research Library) – the literate student accesses needed information effectively and efficiently.

2. Capes Portal of E-Journals

Created in the year 2000 and considered the largest digital library of scientific journals in Brazil (Cendón, Ribeiro and Souza, 2011), the Capes Portal seeks to provide access to scientific and technological information equally to educational and research institutions in the country, reducing regional disparities in access to information (Souza, 2010). In November 2013, the Capes Portal offered access to over 36,000 national and international journals, covering all areas of knowledge, to referential and full-text databases, to books, and to contents such as patents, technical standards, thesis and dissertations, statistical databases and audiovisual content (CAPES, 2013).

In 2009 the Capes Portal underwent a major change in its interface along with the inclusion of a metasearch engine, the MetaLib by Ex-Librix, an Israeli company, which provides information retrieval from several sources simultaneously in a single search interface (Souza, 2010). In 2012 another change took place with the updating of the search engine to MetaLib Plus which aggregates a cloud based service, the Primo Central Index, for electronic resources discovery enabling faster retrieval of information throughout the Portal searchable content (CAPES, 2013).

2.1 Alternatives for information retrieval

Several alternatives of integrated access to resources are identified worldwide, which can be grouped into two categories: distributed search on different servers (federated search) and search in a metadata database, both featuring a single search interface to the user (Marcondes and Sayão, 2001). To Suleman (2002) the search on different servers is called federation or metasearch or parallel searching. The searching in metadata database is called harvesting. These are considered the two main approaches for the interoperability of information repositories.
According to Wadham (2004) the federated search is a technique that allows searching in multiples sources with just one search, providing a single outcome to the user. On the other hand, when searching a metadata database, the metadata of electronic documents are collected periodically to feed a central database where searches are conducted. (Marcondes and Sayão, 2001).

2.1.1 Web discovery services

Over time, concerns started to emerge about the capability of federated search, due to the limited number of resources that can be searched simultaneously, to

the speed of the service, which is dictated by the slowest source to respond, to problem of the duplicity of records and of the relevance of the contents retrieved (Way, 2010). The problems presented by the federated search along with the development of Google led to the creation of the web discovery services.

According to Vaughan (2012) web discovery services combine accessible content with intuitive interfaces. The technology used for these services is not new, since they use metadata harvesting. The innovation does not lie in the technology, but in deals between publishers and content aggregators to pre-indexing of content. The web discovery services index a wide variety of content that can be in institutional repositories, local library records, digital libraries, journals, e-books, open access repositories, etc. Web discovery services are an evolution of the federated search, and according to Way (2010) unlike federated search, these services can search in an unlimited number of resources simultaneously. The system performs a pre-collection of metadata on content providers, allowing the user to search on a single index. The results can be more easily ranked, and the system allows a reduction in the duplication of records.

2.1.2 The web discovery service in Capes Portal of E-Journals

In 2012 the Capes Portal upgraded its search engine to MetaLib Plus, a version of the MetaLib federated search engine that performs a centralized search in the Primo Central Index enabling faster retrieval of information. Primo Central is a tool by Ex Libris that collects and indexes local collections of libraries as well as external collections and items in institutional repositories providing a common interface for the discovery of these local and external contents (Vaughan, 2011). The search is performed by keyword in the metadata and full text. The results are ranked by relevance considering term frequency, weight attributed to terms, number of accesses and peer review. Relevance ranking can still be influenced by rules proposed by the library such as occurrence of the key-word in specific fields or synonyms (Ex Libris..., 2013). The Capes Portal through the MetaLib Plus software and the Primo Central Index service presents two approaches for conducting searches: simple search, - searching in a database of metadata that were previously collected (web discovery service) and, advanced search – searching in real time in selected databases (federated search).

3. Information retrieval

According to Lancaster (1979) information retrieval can be seen as the process of finding a set of documents in order to identify those that deal with a particular subject. Users resort to information systems to satisfy their information needs, which can be conceptualized in various ways by different authors, such as a mental or psychological state of the individual, or a dissatisfaction or disagreement in relation to information. To satisfy the information need, the individual will have to materialize this need in an utterance in natural language which, after conceptual analysis, should be translated into a language accessible to the information system, the interrogation language. The result of the translation of this language is the search query. From there, the system

compares the search query with the representation of the documents, retrieving those whose representation satisfies the search query (Pérez Gutiérrez, 2000).
Debowski (2001) says that to retrieve information the searcher must identify the best terms and develop an effective strategy to retrieve the information. Undertaking a search process is not an easy or simplistic task but a cyclical process where options are evaluated, selected, tested and reviewed constantly, so that searchers can assess the impact of the search and change their routes and processes.

Search Strategies
The search strategy is understood by Rowley (2002) as the set of decisions and actions taken during a search.
According to Lancaster (1979) the preparation of the search strategy involves the analysis and translation of concepts. Initially the analysis is performed in order to determine what the user wants and after that the translation of the concepts to the system vocabulary. When a search is performed, the system compares terms in the records with the search terms. One way to make this comparison is with the use of Boolean operators (Hartley et al, 1990, Rowley, 2002). In the Boolean model, each document is represented by a set of terms. The search expression is composed by the search terms connected by operators - AND, OR and NOT - and in the response set the documents that satisfy the search expression are presented (Ferneda, 2003). Other models are used for information retrieval (vector, probabilistic, Fuzzy and others), but will not be addressed in this review.

4. Information literacy

The concept of information literacy was introduced by Paul Zurkowski, president of the *Information Industry Association*, in a proposal submitted to the *National Commission on Libraries and Information Science* (NCLIS) in 1974. Paul Zurkowski defended the need to adequately use the electronic databases which were commercialized in the US since the 60s (Campello, 2003). In 1989 the *American Library Association* (ALA) published a final report defining the concept of information literacy and its importance for education, citizenship and the workforce in the Information Age (Rader, 2006). According to this report, all people should have access to information so they can improve their lives, being able to get them to fit a wide range of personal and business needs. People should be able "to recognize when information is needed and have the ability to locate, to evaluate, and use effectively the needed information." (ALA,1989).

In 2000, the *Association of College and Research Libraries* (ACRL) publishes the document *Information Literacy Competency Standards for Higher Education*. Thus the issue of information literacy gained more importance (Rader, 2006). In Brazil the discussions on this topic started after the year 2000 (Gasque (2012) and have yet to be intensified, both in elementary education and in higher education where there is little concern in systematize a program of learning for both students and teachers (Gasque, 2008). According to Bernhard

(2002) it is essential to ensure that students in higher education develop skills in the use of information, especially when there was failure in the development of information literacy in primary and secondary education.

The importance of standards for libraries and consequently for the development of information literacy has been recognized for a long time. In the context of higher education the *Information Literacy Competency Standards for Higher Education.* published in 2000 by ACRL (ACRL, 2000), stands out. This document has five standards, 22 performance indicators and more than 100 expected results. Also important are the assessment procedures that measure the effectiveness and efficiency of the development of information literacy activities, particularly in higher education, where, according to Placeres Meneses (2008) the need for assessment is pronounced.

5. Methodology

The study will investigate the impact of training in the use of the Capes Portal at the level of information literacy of students. The research which will adopt a qualitative approach, will be conducted in the Pampulha Campus of the Federal University of Minas Gerais – UFMG. It consists of a comparative case study among students participating of user training of Capes Portal of E-Journals offered by the university library.

The universe of study will be composed by students belonging to all graduate and undergraduate university courses, which houses 75 undergraduate course and 77 graduates programs in all areas of knowledge. The accidental non-probability sample will be formed by students who enroll voluntarily in a training program offered by the university library to the UFMG community. Six students will be chosen, taking into account the time available for the research, and the proposed in-depth analysis of the search process and system usage.

The research will use as methods for collecting data the non-participant observation and the guided interview. Data collection will be conducted in two stages. In the first part, six students will be chosen to perform a search in the Capes Portal. These students will be observed at two different times, before and after receiving training, with the aim of monitoring the cognitive process and system use. In the second part, students will be interviewed post-training to identify the problems and difficulties related to the search in Capes Portal of E-Journals and verify that they are applying the knowledge acquired in training the Capes Portal in other situations, beyond academic life.

The observations and interviews will be guided by the Standard Two of the ACRL *Information Literacy Competency Standards for Higher Education* - the information literate student accesses needed information effectively and efficiently. The observations will be recorded through a protocol of observation where descriptive and reflexive analysis of the researcher will be noted. After collecting data, categorization, analysis and interpretation of data will take

place, in order to detail the search process and the use of the system to verity if the training impacts positively in obtaining information literacy.

The interviews will be transcribed and analyzed using the technique of content and subject analysis. The categorization and analysis will be performed based on data obtained during the interview and oriented by the Standard Two of the ACRL *Information Literacy Competency Standards-for Higher Education*.

6. Conclusions

This research is a study still in progress. Data collection will take place at the end of the first half of 2014. It is expected that results will permit to assess whether the training on the use of the Capes Portal of E-Journals is not only having a positive impact on the achievement of informational and research skills in the Capes Portal but also whether this competence has been transferred to other spheres of the students life.

From the data analysis we intend to recommend actions for a better utilization of Capes Portal of E-Journals, proposing principles and guidelines that can support actions and future training.

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