

*Improving research and learning in higher education in Portugal: Digital resources, e-books, and a discovery system as enabling factors for students<sup>1</sup>*

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### **Abstract**

This article describes a library's implementation of digital resources for research, teaching, and learning at higher education institution in Portugal. A school specializing in education and teacher education established strategic performance areas related to digital resources for the fulfillment of its mission, which included some functions of the academic library. The library implemented a discovery system and the school invested in a wider range of resources, including e-books, both acquired and institutionally published. The library's training programs were also revised to promote the new system and electronic resources. This case study describes how an academic library in Portugal responded to institutional needs, illustrating how libraries everywhere must connect to the larger vision and demonstrate value through technologies, integrating digital and print resources to provide access built around users' needs.

**Keywords:** Academic Libraries; Discovery Systems; Digital Libraries; e-Books; Higher Education; Information Literacy

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## Introduction

Societal changes in the past two decades have led to more electronic resources becoming available. Changes regarding information support, resources, and forms of research and access have completely changed learning practices in education, particularly in the university context (Zucker 2008; Surry, Stefurak & Gray Jr. 2011; Laurillard 2013). Many university students have a laptop, want to access the internet, look for information in databases, and record their notes directly into digital format. Sharpe, Beetham, and de Freitas (2010, xviii) also stated that “instead of only noting their ideas in their own notepads, [learners] can now add their ideas to the original sources or even challenge or adapt the original sources.” This also means that the technology has to be available in learning contexts. To match this social transformation, libraries, particularly university libraries, need virtual spaces that allow users to interact with digital information.

The challenges posed by these social and technological changes have forced universities and libraries to adapt. The study *No Brief Candle: Reconceiving Research Libraries for the 21st Century*, stated:

With digital collections becoming boundary objects between academics, librarians, students, and designers in a manner that has no obvious historical parallel, the ability to engage in the most fundamental way with the mission of a university will define the importance of academic librarianship in the future. (Council on Library and Information Resources 2008, 53)

The academic library is tied to the academic mission of the university. In contextual terms, this same study referred that “we must recognize the shifts in scholarship practices that are occurring in our universities and research labs, and then seek to understand how the library functions appropriately in this new world” (Council on Library and Information

Resources 2008, 53). Muet (2009) summarized some changes in higher education that involve and challenge the performance of university libraries. She stated that there is a trend towards higher usage of digital items, which impacts what resources universities choose to acquire and display. These changes in libraries, also related to changes in higher education, show increased heterogeneity of library users, a wider range of services, and the cross-cutting and specialization of collections. Muet (2009: 12) said that a modern academic library must be organized in order to reflect its various components, including digital collections, in an integrated system of services. She underscored that the combination of services and multiplatform resources, including supporting students and researchers, adds value to the library.

The challenge therefore is for libraries to be more conscious of their role in learning. In fact, the library contributes to the university in several ways, becoming an integral part of research, teaching, and learning. Aware of the constant changes in higher education institutions, such as an increase in the number of students and changes in the proportions of nationalities and age groups, university libraries must act upon the development of capabilities of learning and fostering research, namely through the information resources that they provide, updating them to meet changing customer expectations and new technologies.

The changes in the paradigm of teaching and learning are also important to this reflection. Learner-centered teaching requires using computer-based and multimedia learning resources which are also available in the library. Digital libraries and repositories facilitate reuse of digital content, potentially in different contexts, and allow access to a range of resources to support the teaching of complex ideas, as well as encouraging students to take the resources and reinterpret them for themselves, thus adding value to the student experience (JISC 2011).

Portugal is no exception to these trends. This article will describe how the implementation of a discovery tool, increased investment in e-books, and the enhancement of information literacy training helped the Documentation Division of the Institute of Education and Faculty of Psychology at the University of Lisbon demonstrate its alignment with institutional strategy and mission.

### **Literature Review**

Libraries are no longer exclusive portals for access to scholarly information. Information is ubiquitous and can be obtained through multiple access points. The trends of multi-disciplinarity, globalization, and mobility play a key role in the organization of library resources. Flynn & Vredevoogd (2010) listed some of these trends, underlining the complex content which balances innovation and tradition and handles fewer resources while at the same time promoting technological advancement. Before approaching our specific case, it is worth giving an overview of the resources and discovery systems, especially ebooks, provided by libraries.

With respect to the context of higher education, Facer and Sandford (2010) believe the next 25 years will challenge the standing educational organization. They state that social and technological change will require new approaches regarding curricular construction, more inter-institutional relations, the further development of workers and decision-making capacities in the educational context. Learning will focus less on school and more on the community, at home or at work; on the other hand, it will focus more on the individual in a lifelong learning process than on the age to learn. The information landscape will become denser, deeper and more varied, so technology and education must be made to converge towards solutions that allow individuals to deal with this information.

In this context, the systems that support the educational organization, and therefore the university library, must ensure interoperability, because the platforms are more and more diverse. There is a clear movement of virtualization of the collections, reading is increasingly hypertextual, and the discovery strategy is increasingly used.

Internationally, public libraries were the first to adhere to ebooks, back in the 1990s. Academic libraries only began to invest in them around the year 2000 (Sheehan 2013, 75; Pinheiro 2014, 3). At the end of the first decade of the new millennium, the introduction of the Kindle made ebooks commonplace in most libraries of the Western world (Europe and USA). As Sheehan stated, “librarians have found themselves rushing to keep up with the early adopters, and educating patrons who are ebook reticent” (2013, 75).

Portugal is about 15 years behind. It was only around 2005 that ebooks in public libraries were introduced. Only very recently did these documents become an integral part of academic libraries. Even today there are hardly any studies on this reality (Silva 2015). The most important work carried out in Portugal recently (Cardoso 2015) talks about what happened to reading and to its different formats with the introduction of books in digital format. Cardoso’s extensive research study results from a set of investigations and reflects in-depth about the changes introduced by digital reading.

This general situation in Portugal has one exception. It is the project *Ebooks and digital reading: Oeiras Reading*, reported by Eiras and Pinto (2015). Implemented in Oeiras, an area on the outskirts of Lisbon, this project has four axes of intervention. The first was an online inquiry for the area’s library users, to understand how they perceived this matter and what their needs and expectations were regarding making ebooks available; the second involved training actions on ebooks, tablets, and e-readers, to provide basic knowledge and clarify doubts; the third axis involved making digital content (ebooks, newspapers, and magazines) available through a collection released in the public domain;

finally, equipment was provided (tablets and e-readers) to provide hand-on experiences with these materials.

Silva (2015) also looked at the Portuguese situation and stated that despite ebooks representing new challenges for libraries and librarians, the current technological scenario requires reflection about the integration of new digital media in libraries and making them available to the public. New forms of acquisition, access, dissemination, ownership and legal rights imply changes in the document management process (Silva 2015, 10-11). As regards effective subscriptions, in Portugal the actual business models and the editing of Portuguese books in an ebook format for public libraries are at a very early stage, to say the least (Coutinho & Pestana 2015). The few companies which work in this sector have not yet found efficient measures for lending ebooks (Silva 2015, 63; Pinheiro 2014, 9). The solution has been for libraries to access sites where contents are free and downloadable. However, this measure circumvents the use of the public library.

There is a more promising panorama in university libraries, because there seems to be a preference for digital formats, which stems from a context of online scientific production and publication (Cardoso 2015, 493). However, the truth is that in academic libraries, ebooks are managed through package subscriptions, and are often already included in large-size databases. For the end user, who is used to an open access culture, there isn't much of a distinction between types of electronic documents. Cardoso's (2015) is the sole study about ebooks in Portuguese university libraries, and it focuses mostly on open access and digital reading. A national research on university library trends, information literacy instruction, and users' informational behavior is needed within the Portuguese setting. At one point Cardoso mentions that researchers tend to value publications where they themselves publish, but that they reveal great appetite for all

information that is simultaneously available in digital format and in open access (Cardoso 2015, 507).

Discovery systems enable the integration of information from different electronic resources, allowing advanced searches through a single portal. *The Environmental Scan* by ACRL (2015) provides an overview of the current environment for academic libraries and how a discovery service enhances that environment:

“The configuration and local enhancement/customization of a discovery service enhances the user experience and encompasses the library’s print, media, electronic resource, library services, library staff and expertise, and resource guides. Enhanced discovery requires library staff with systems thinking and web development skill sets.” (ACRL 2015, p. 14)

Despite international examples of selection criteria applied to discovery systems (Chickering & Yang 2014; Fagan, Mandernach, Nelson, Paulo, & Saunders 2012), the main reason for the FP / IE library choice had nothing to do with an evaluation of this type. EBSCO Discovery Service (EDS) was chosen because this system improved and updated the search platform of pre-existing databases made available by EBSCO. Additionally, the users’ familiarity with the EBSCO platform would provide confidence when searching, and build or continue trust during user training.

Studies on discovery systems are relatively recent and focus mainly on usability tests of these systems (e.g., Foster & MacDonald 2013; Djenno, Insua, Gregory, & Brantley 2014) or on how they influence users’ behavior towards searching (Haglund & Olsson 2008). These complementary approaches provide an integrated view of the phenomenon of discovery system implementation. These studies suggest that implementation of a discovery system can affect libraries’ functions, particularly reference services and user searching. Increasingly furthering and widening the scope of their

searches, users feel the need to have tutorial training in these tools. Likewise, services must undergo continuous adaptation so as to adjust these new tools to libraries and vice-versa.

In Portugal, the implementation of EDS was first carried out in 2011 at Oporto University. Since then, another eleven higher education institutions have acquired and implemented this platform. So far, no studies regarding these experiences have been published.

### **Regional and institutional context**

In the last twenty years, Portugal increased compulsory education to 12 years, thus expanding access opportunities to higher education. Since the turn of the century, significant investment has been made in tertiary education, in research and in adapting education to employability. University libraries are now facing several challenges, such as the need to optimize resources and improve technical efficiency, the need to balance tradition with innovation, and the need to continuously adapt to the technologies supporting the exponential growth of digital scholarly information. There is also the need to improve access to collections and to information resources, which implies training users, thus helping them become more efficient and thorough in obtaining information. So it is essential for libraries to take on a pedagogic role in order to enhance learning through scholarly knowledge. In Portuguese libraries, technical efficiency and resource optimization are major issues. According to a study by Sanches (2015), in Portugal university libraries have similar characteristics and have information systems that are compatible with their functions. Usually universities have a common, federated catalog for all the faculty libraries, with the possibility of inserting information and searching in several access points. Other technological aspects have been considered particularly, such as scanning historical documents, introducing links to full text, optimizing institutional sites (with access to electronic resources) and using social networks to communicate. Little



by little, resources have been incorporated into integrated platforms, so that users can access several resources from one single point for a virtual search.

In the services provided to users, besides spaces for reading and local consultation, the *ACRL Standards for Libraries in Higher Education* advise libraries should “enable users to discover information in all formats through effective use of technology and organization of knowledge” (ALA 2011). The discovery of resources is possible if libraries propitiate a systematized set of resources, with organized access and available to the public. That is why targeted training is so important, because this investment is visible in the number and type of searches carried out (Sanches, Revez, & Lopes 2015). Most libraries ensure the training of their users beyond on-site training by participating in classrooms (usually at the start of the school year) to explain how services work and how to access electronic resources (Sanches 2014). Libraries respond to existing conditions by adapting routines, optimizing team competencies, and seeking to reach more users (Sanches 2015). The aim is to make users self-sufficient, to foster technological adjustment, and to simplify library procedures so as to more efficiently complete tasks and routines.

Lisbon University is the largest university in Portugal, serving a population of about 50,000 students, with around 3,500 teachers and 2,500 non-teaching staff. Located in the capital city, it includes 18 schools (faculties and institutes). The faculties are schools aimed at teaching, providing graduate and post-graduate courses. The institutes focus on research, essentially offering post-graduate courses and degrees, such as master’s and PhD degrees. The University of Lisbon has 22 academic libraries, organized according to themes in line with the fields of education and research of each autonomous unit. The libraries are in close proximity to the students’ learning environment, with extended opening hours and over 100 staff members, most of whom have professional qualifications.

The use of the libraries at Lisbon University is intensive, both locally and remotely, in terms of search and discovery. Comprising over 1,200,000 physical documents and thousands of digital documents, the libraries have the SIBUL and Koha catalogs in common as well as the institutional repositories, the digital library, and B-On (a nationally-funded database for research and higher education institutions in Portugal). The two institutional repositories that still exist stem from the prior existence of two universities, which merged in 2013. These are the result of academic production, containing theses and dissertations, as well as scientific papers, pedagogic materials, reports of scientific projects, and other documents produced by teachers and researchers. The digital library results from the digitization of pedagogic documents produced within the University and the digitization of book and journal collections whose copyright is already in the public domain, particularly in the field of literature. B-On is the result of the Portuguese government's negotiation with several publishers, through the Foundation for National Scientific Computation (FCCN), to provide an extended package of scientific journals to higher education and research institutions.

Each individual library also subscribes to A-to-Z software (searchable and browseable lists of journals) and specific research databases, including EBSCO databases. That means that each library maintains its own database subscriptions, in parallel with the joint subscriptions made by the ULisbon public consortium. These resources support research conducted by faculty and students. By enabling ongoing self-learning, self-training, and education, libraries play a decisive role for the development of the education they support, forming partnerships that connect these libraries and their resources to teaching.

The Institute of Education (IE) is a school of the University of Lisbon, designed to research, train, and intervene in specific education and training problems in Portugal. The

major goal of IE is to contribute to a better understanding of the educational phenomena and training processes, thus working towards an improvement of the quality of education and training. The institute supports doctoral degrees, masters' degrees and a single bachelor degree, all in Education and Training. In order to reach this goal, the institution counts on the collaboration of all the educational actors involved – teachers, trainers, educational technicians, librarians / library staff, researchers and public and private institutions. That is why developing projects, creating partnerships, and collaborating inter-institutionally are key strategies to this organization.

The Documentation Division of the University of Lisbon Faculty of Psychology (FP) and Institute of Education (IE) coordinates a library, with 5 librarians and 3 librarian technicians, shared by these two institutions. The library serves an academic community of 2,250 students, teachers, and researchers. With 70,000 visitors a year, this library provides about 44,000 book titles, 1,300 journal titles, several specialized databases containing thousands of documents and, in its 370 square meters of space, has 132 seats for the general public. The latest inquiry regarding the quality of the services delivered showed that the level of user satisfaction was 83%.

As for the use of resources, this library stands out in the university for its users' strong appetite for database searching: in 2014, there were 937,666 searches in the EBSCO databases and 10,480 journal searches in A-to-Z. Also in 2014, 18,139 books were consulted locally and about 6,500 loans were carried out. Additionally, 1,663,746 downloads from the institutional repository were made by people around the world.

### **Future Top Priorities at the University of Lisbon and Library Aims**

Four years ago, a study was carried out regarding the Lisbon University library network. In this study, the head librarians declared that the top priorities for the following

three years included the development of collections, the implementation of new services for users and new extension activities, the need to increase partnerships and promote participation in working groups and, finally, the development of strategies to improve commitment to teaching and learning (Sanchez 2012). There are plenty of possibilities in this context to promote the use of technologies on a regular basis, including the use of digital resources in research. Recurring aspects are the librarians' visits to the classroom to explain how to search in the catalog and in the databases, bearing in mind the subject being taught. Another one is projecting and disseminating the research carried out by teachers and researchers by making reference to them and emphasizing them in the library catalog, institutional repository, or library web site.

The Institute of Education has therefore adopted a strategy to respond to new digital environments, involving three spheres: online learning, electronic publishing, and developing library collections and search skills. The library's involvement is mostly in the third sphere, although it supports electronic publishing by providing e-books in general, promoting and running the institutional repository, and providing access to locally published e-books.

The focus of the present study is on the electronic resources used across education. I will not focus specifically on Psychology because that faculty does not have an express policy on publishing electronic materials. For instance, the e-books collection of the IE is a compromise of the institution with open access movement and a more effective and efficient dissemination of research produced by our teachers and researchers. In the following pages we will describe the library's involvement in electronic publishing and developing library collections and search skills.

Publishing Resources: Online Journal and E-books

The integration of e-books as a digital resource strategy in the Institute of Education is an ongoing process that shows the institution's focus on innovation. The e-books collection encompasses the following sets:

1. Nine e-books edited and published by the IE and made available through the official website (<http://www.ie.ulisboa.pt>) and the institutional repository (<http://repositorio.ul.pt>);
2. Nine digitizations of a collection of books of the IE's former publishing house (EDUCA) and made available through the institutional repository (<http://repositorio.ul.pt>);
3. 3,459 e-books available through EBSCO databases – Academic Search Complete, Business Source Complete, Education Research Complete (2010-2012)/Education Source (2013-2014), and Research Starters Education;
4. 1,490 ebooks from the subscribed collections of Springer titles.

Across these four collections (totaling 4,967 ebooks), there were 52,423 downloads in 2014 . These numbers suggest good acceptance by the academic community of the digital resource strategy implementation in 2014 (see Table 1).

[INSERT TABLE 1]

Considering there are only 9 ebooks in the repository collection, the number of downloads is very impressive. I think that what explains this fact (and also the EDUCA number) is that the subjects are very specific and related to the interests areas that are on the cutting edge of education research in Portugal (related also with the degrees provided in IE). The fact that we strongly publicized and promoted the Springer ebooks collection may explain that large total.

Supporting the need for improved searching

Together with the increase of online review collections and the maintenance of the institutional repository and specific databases, the increase of the vendor and ebooks collections in 2015 added complexity to those performing searches. Until the end of 2014, all the library's e-resources were made available as a set of links aggregated in a single page, but in such a way that thematic searches had to be repeated in various portals.

For example, a student trying to search a certain topic for an academic assignment would have to perform a search to find printed books in the library's catalog, perform a search on the Springer link to find ebooks, perform a search in the A-to-Z index to find journal titles, perform a search on the institutional repository to check on-line theses, and perform a search on the EbscoHost portal to find relevant articles.

Even with impressive usage statistics, the library wanted to improve the service provided. We felt the need to aggregate in one single point all searches to access journals, repository, databases, ebooks, and the catalog to support more efficient searching, rather than have each collection isolated on its own search platform. The library therefore investigated discovery service software in order to aggregate all resources in one single search engine. The library thought a discovery tool would not only help make valuable collections more findable, but also allow for enhanced virtual communication with users, by simplifying the online library search page, and facilitate their research.

EBSCO Discovery Service was chosen by the library for its scope and accuracy, for its powerful relevance algorithms based on complete metadata, for the detail allowed in the search (limiters, expanders, and filters), for its enhanced performance, and better speed. Other reasons for the library's choice included its simple implementation, monitoring by a very competent technical support team, and the platform's possibilities in terms of customization and user-friendliness, as well as the constant updates that are carried out. EDS was also chosen for the quality of its customization, personalization, search tools,

exporting, interoperability, and content aggregation. However, the most important reason was the fact that its presentation layout was very similar to the one our users were already familiar with: EbscoHost, the research platform of the most-accessed databases.

Our library implemented EDS in the first trimester of 2015. The implementation can be summarized in three stages. First, a single list with the hyperlinks to the library resources was provided to the team in charge of collecting and displaying all the resources in the platform. Next, the library answered a detailed questionnaire regarding the way we wanted our databases to be updated by resource suppliers (known as partners), such as EBSCO, but also open databases, Springer, or Educa. The choice was between a continuous and a periodical weekly update; between updating all suppliers or only some, and other similar issues. Lastly, with our help, EBSCO carried out final configurations and customization, such as inserting the logo, implementing the settings, inputting the widgets, establishing the connections, making everything ready for the library staff to include in the institutional site.

In the second trimester, the implementation of EDS proceeded with several activities. A trainer from the company visited our location to deliver training to the library team. Then, the library team prepared a set of actions to disseminate the platform through face-to-face sessions, Facebook, and mailing lists. Finally, three librarians prepared and delivered training to users in the platform. The user training went very well, thanks to the librarians' previous knowledge and years of experience with searching using the EbscoHost interface.

In reference service, the perceived impact and users' acceptance was very positive and the library anticipates the expansion of this discovery system to the whole university. Some other University of Lisbon schools have already implemented it or are planning to do so (such as the Institute of Social Sciences, the Law Faculty, and the Higher Institute of

Economy and Management). We have simplified the library sites in order to change from the list of databases to the discovery tool, both in the Faculty of Psychology and Institute of Education Schools, which will consequently simplify user training.

#### A training program for students

Training is a crucial step to reaching the goal of supporting student success. The FP / IE library believes that training is a structured manner of creating value and is expressed in three distinct strands: the promotion of lifelong learning, the economic return on the investment in quality resources acquired, and a strengthened relationship of trust between librarians and the academic community (Sanchez, Revez, & Lopes 2015). As institutions meant to support learning and research, academic libraries must pay close attention to the changes technology imposes on learning.

The inclusion of access to ebooks in university libraries, and in this one in particular, requires that teams and users are provided with competences in digital literacy. Teams must have information about the changes that digital technology brings to reading and to libraries; be familiar with the operative systems; master competences related to the use of digital contents and reading equipment; and know how to manage and produce digital content. Users must be trained in digital literacy in order to efficiently and selectively search, choose, download, and use these documents to their academic benefit.

The initial training programs have been designed with this focus on digital resources and their use in mind. Training sessions, whether in the classroom context or in thematic modules, which students can sign up for freely, are an incorporated practice in the community and have been very well received by their users because they meet students' expectations and adapt to their learning needs. In the past years (the first structured instruction programs were in 2008), the 3 librarians involved in training provided the



instruction in three program modules. A further study on this has been presented before (Sanches, Revez & Lopes 2015). The instruction was presented as follows:

1. Search and manage information I: supporting basic academic work
2. Search and manage information II: support for theses and dissertations
3. Bibliographic management software: My EndNoteWeb

The Documentation Division of the Institute of Education and the Faculty of Psychology ensures the provision of a service to an academic community comprising students from the Institute of Education (around 1,050) and students from the Faculty of Psychology (around 1,090), and about 110 teachers and researchers. So there is a total population of around 2,250 potential trainees. In 2015 the library offered 23 classes, covering a total of 472 students.

The training plan is still ongoing, improved in 2016 with one more component (on how to cite and make references) and the number of students attending these sessions historically is shown in table 2.

[INSERT TABLE 2]

In 2012 and 2013, some changes undertaken promoted a renovated training plan in the form of workshops and led to a significant increase in the number of enrolled users and, of course, in the number of the two-hour sessions held and hours dedicated to user training. We must emphasize that these free-attendance sessions were always full. Students' perceptions of the importance of the contents of the sessions for their academic success became a reality.

The changing technological context led to the need for students to know how to use computer technology in order to access resources both in the library and all over the web.

It is also more and more important that students can be taught to analyze and interpret both the sources used and the information retrieved. Therefore, we cannot ignore the changes of electronic resources available in the design of information literacy programs, in their contents as well as in their format. Intervention in this area also led students to a greater proficiency in dealing with searches in electronic databases and other information resources.

The user training programs in information literacy are based on the idea that information literacy can help respond to several requests throughout students' university studies (Rockman 2004; Lau 2006). Programs are meant to help carry out specific academic goals of the different teaching/learning stages: school projects in different subjects; getting a degree by presenting a dissertation or thesis; or advanced research activities that require detailed bibliographic management. Hence the idea of levelling the program in three modules, targeted at very specific aspects of learning which are closely related to the educational level students are attending — 1<sup>st</sup> cycle (graduation), 2<sup>nd</sup> cycle (master's), or 3<sup>rd</sup> cycle (PhD). The aspects underlying user training are no longer solely regarding the use of the library and its bibliographic resources. A new approach, introduced by information literacy, includes other abilities and competences, according to the American Association for Community College's *Position Statement on Student Services and Library and Learning Resource Center Program Support for Distributed Learning*:

Information literacy, which encompasses information fluency and information technology mastery, is critical to success in higher education and lifelong learning. (...) wide variety of choices raises questions about the reliability, authenticity, and validity of content and poses challenges for students trying to evaluate, understand, and apply the information. (AACC 2004)

Thus, this program always aimed to combine program contents and goals with a strong practical side, illustrated through concrete cases based on trainees' real needs – for example, answering questions such as: *How do I quote a reference with APA criteria?*; *How can I structure the search according to the chapters of my thesis?*; *How can I save the information I searched and recover it later?* These and other questions are answered through the curricular contents of this training program, flexibly adapting the proposed structure to the trainees' needs, abilities, and competences.

Over the years our users' propensities come to light (Sanches, Revez, & Lopes, 2015): these students are more discriminating with respect to their searches, refraining from HTML pages and abstracts and focusing on full-text downloads (mostly in PDF). This tendency confirms that the library training actions are effective, because they recommend specifically that students observe the safest and most reliable ways of quoting an information source, taking into account authority criteria, and the benefits of using PDF format.

Over 83,000 electronic documents were downloaded in full text (and over 245,000 abstracts consulted), together with around 6,600 printed books loaned and 11,400 documents consulted in the library facility. These numbers are a sign of vitality in the use of the library's materials in 2014, encouraged, of course, by user training. We consider these data an excellent sign of the vitality of the electronic resources in our institutions and of our users' appetite for information in a virtual context.

## **Discussion and Conclusions**

An important next step will be to implement the use of e-resources as a diary-based tool in continuous professional development activities, knowing that these activities are a crucial factor in upgrading teacher knowledge and skills. In fact, if the use of the discovery

system (and ebooks) becomes a class tool, naturally the students will acquire the skills to deal with information search in a more proficient manner, and later it will be easy to deal with it in professional contexts. Successful implementation of electronic resources is partly conditional on the capacity of institutional structures to bring coherence to a changing agenda, and to explain, persuade, and motivate teachers, staff members, and students.

Beaupre (2000) stated that a combination of traditional reading, media, and Internet information sources is necessary in today's educational sphere to bridge cultural differences, engage students' realms of experience, and promote academic and cultural literacy. She advocated that educators must utilize and extend the vehicles students are currently using in order to enhance critical thinking skills (Beaupre 2000). That is why it is so important for schools to have and display multiple information resources, especially digital resources. In this process, it is also important that students be taught to evaluate the media sources they use in relation to other printed information. This is also important to be provided in training, adding complementary skills to students.

This case study describes how one academic library responded to its parent institution's strategy of adaption to the digital environment. The Institute of Education's strategy was three-fold: investing in distance learning, developing online publishing, and improving search tools in digital environments. These three areas combined the institutional vision for shaping university library practices, leading us to acquire electronic resources (that include ebook collections and specialized databases) and implement a discovery search tool to enable direct improvements in research and in learning.

As regards user training, the library had to bear in mind what Furtado (2012, 203) called complexities in the current information environment:

For new forms of products created in the movement towards a largely digital information space, a more open and complex literacy is necessary, one that integrates the technical literacy but is not limited to them. (...) In this literacy, understanding, meaning, and context must be central, which implies that information literacy training must be equally vast and must take on different forms according to its context.

User training began to integrate EDS platform training, crossing information literacy skills training with the academic competences and knowledge that students are acquiring.

The Council on Library and Information Resources (2008, 49-50) stated that the existence of e-research has implications not only in the way science is made, but also in the way libraries are organized. Libraries will continue to support research and to encourage the data and information search in any format. This is why “a powerful user-centric infrastructure that supports collaborative multidisciplinary science” is so important (CLIR 2008, 49-50).

In this sense, it is important to invest in the acquisition of digital resources, making them available, providing specific training, allowing and encouraging access to them. Some of this library's strong points of action are related to the factors identified and have already been discussed in another study (Sanches, Revez, & Lopes 2015). It is important to note that training has a direct impact on more intensive and complex searches in the acquired information resources. This will bring the return on investment from these features. On the other hand, the segmentation of training activities according to different user groups is a way to strengthen confidence in the training that is provided, because it focusses on resources and methodologies that are better for the users. It is also to reinforce the idea that strategic management in higher education should involve decisions that have

an impact on teaching and research, but also involve an integrated perspective of products and services developed by the library.

Efforts have been made over the years to adapt information literacy instruction to user needs. As institutions devoted to supporting learning and research, academic libraries should pay attention to the changes that technologies impose on learning. The experience of the Library of the Faculty of Psychology and Institute of Education is just one example of how this adaptation has been carried out, with a focus on digital resources and on the new challenges to academic work. The training program was designed with these challenges in mind and it is already incorporated in the community, with a very positive feedback from its users.

This paper aimed to show how a library serving two schools (one specialized in Teacher Education and Training and other in Psychology) strategically invested in digital resources. The FP / IE library's experiences show that training enables the development of practical technology skills in students, which is critical because of the intersection between learning, technology, and the digital society. This development is essential in the education of both students and teachers. As Howard stated, "library involvement in digital literacy skills development is widely recognized and is key to moving forward the open education agenda" (2014, 70). The FP / IE library concludes that much effort has been made to improve the quality of the resources offered, which will impact teaching and learning because more resources and better searches allow scholars to explore further and create more knowledge. This improvement is achieved by the University by investing in a wide scope of digital resources for research, including the publication of ebooks and a scientific journal, a digital environment for the provided degrees (e-learning and b-learning) and, with respect to the libraries, by investing not only in a discovery system but also in information literacy instruction. This strategy aimed to expose the academic community to

different forms of accessing digital information, thus facilitating learning and research, expanding awareness of digital literacy, and encouraging scholars to more widely disseminate their results.

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