Transforming reference work into teaching: From a librarian to an information literacy-oriented university professor

Juan D. Machin-Mastromatteo

Universidad Autónoma de Chihuahua

Abstract

This chapter explores the dynamics involved when individuals move from reference librarian positions to full time teaching roles, particularly around the continuing practice and development of information literacy (IL) activities and initiatives with special reference to the library and postgraduate courses relating to two humanities and education programmes. Both perspectives involve developing IL-related skills such as using digital databases, indexes and documents, scientific journals, scientific writing, a publication manual and a reference manager. The discussion of each perspective includes the design of instruments for measuring the success of IL-initiatives (particularly for assessing learning and user satisfaction), as well as the results obtained from the implemented instruments, lessons learned and reflections upon the practice of IL using a self-study action research approach.

Keywords: information literacy, digital literacy, scientific writing, librarians, career change, teaching, action research, training of young researchers

Introduction

In this chapter I examine different aspects of my career regarding my work in the development of information literacy (IL) initiatives. The first section of this chapter deals with the current dynamics of change affecting librarians. These are bringing forth an increasing number of opportunities that we librarians can harness to position ourselves in current learning institutions and environments, characterized by an all-pervasive, all encompassing -j presence of digital technologies. Next, I present a review of the issues around career changes and what can motivate librarians to change careers, as it is a change that I experienced myself. The second section of the chapter is about the practice of IL, with an analysis and practical examples of the instruments that we can use to assess the success of our IL initiatives, together with advice on how and where to use them. Then, I present the instruments that I designed and used myself as a librarian and university professor still focusing attention on IL in my classes; I also provide a summary of the results gathered. In the conclusion I reflect upon the lessons learned from both perspectives: working with IL as a librarian and then as a professor. Given the practical instrument design and results gathered through their implementation, as well as the discussion and reflection of the lessons learned throughout my career as an IL specialist, this chapter will be particularly useful for IL practitioners wanting to enhance their own initiatives.

The chapter includes the presentation of data systematically obtained from the application of formal research instruments, personal experiences and observations derived from my own experiences. Such personal narratives and reflections are framed in a self-study action research approach, which, according to Feldman et al. (2004) encapsulates the subject, their educational experiences and practices, as well as their roles as resources for research. Similar approaches, although not explicitly recognized by their authors as self-study nor action research, are evident in the reviewed literature as personal and professional journeys and reflections on professional library careers (Bagnall, 1993; Dougherty, 2001; Edwards, 2002; Johnson, 2002; Zemon, 2002; Fontenot, 2008). Although not always specified, action research is essentially connected to most IL research and practice (Machin-Mastromatteo, 2017).

Dynamics of change for librarians

Networked information ecosystems and information and communication technologies (ICTs) have been acknowledged as among the most important factors driving library innovations. They create new dynamics, which give rise to diverse work challenges and opportunities that library and information science (LIS) professionals may be exposed to, transcending the traditional functions of our profession (Lancaster, 1982; Kong and Goodfellow, 1988; Walter, 2008; Corrall, 2010; Noh, 2010). This affects librarians' teaching roles, exercised through IL and research support activities (Fowell and Levy, 1995; Davis, 2007; Walter, 2008; Corrall, 2010; Bewick and Corrall, 2010; Wheeler & McKinney, 2015; Sanches, 2019), aimed at students, teachers, researchers and citizens in general, depending on the type of library or information service in which they are based.

Designations for librarians have emerged, depending on their working domains and identities, such as para-academic, hybrid, blended or embedded librarian (Corrall, 2010). Hybrid librarians are related to hybrid libraries, which work with both print and digital resources (Rusbridge, 1998); librarians' para-academic roles include resource-based instruction, learning and supervision (Fowell and Levy, 1995). Blended librarians apply skills from librarianship, ICTs and education (Bell and Shank, 2004) and thus require a combination of the skills from these three areas (Allen, 2005) in order to fulfil three functions: administrator, teacher and member of support staff. Librarians must therefore develop a triple identity in order to perform such functions, particularly in university libraries.

Corrall (2010) clarifies that a hybrid usually refers to a combination of two elements, while blended refers to a combination of three or more. Embedded librarians are those who actively participate in instruction processes either as a partner of the teaching staff or by providing support to teachers and students (Association of College & Research Libraries, 2016). Shumaker (2012) highlights that embedded librarians' value-added contributions and activities, which take place in the same course environments (digital or otherwise), can include co-teaching, which is considered the most important aspect, as well as retrieving and reviewing literature, participating in the curriculum of a given programme or course and even in its development, providing research and support to faculty and

students. He also stresses that embedded librarianship does not imply repeating traditional library activities in other places; what it involves is offering librarians' skills for the purposes of educational activities.

LIS education tends to provide very good research and management skills, including research management (Corrall, 2010; Lambert and Newman, 2012), which are useful for librarians to fulfil their many tasks, including those that are related to their new roles in education. IL, an area of growing importance for the LIS field, is at the centre of this steadily growing teaching role for the librarian; hence, LIS curricula need to address these considerations or be updated accordingly, as it must comply with state of the art research in the field, national and international standards, as well as the realities of librarians' work (Corrall, 2010).

From her experience at the Sheffield Information School, Corrall (2010) recommends working with the LIS curriculum by questioning the nature of our profession, competencies, identity, evolving roles and career paths. Not all LIS schools worldwide offer courses about teaching or developing IL and perhaps fewer schools include courses related to teaching, learning and education. Hence, many LIS professionals are not professionally prepared in their studies to assume a teaching role (Walter, 2008) and librarians highlight the importance of addressing this weakness in future LIS curricula including courses on IL instruction (Bewick & Corrall, 2010). It is also interesting to note the scarcity of specialized research addressing topics such as: a) how librarians learn how to teach; b) ascertaining their actual knowledge of IL; and c) how they apply such knowledge in their teaching practices (Bewick and Corrall, 2010). Although the previous statements may define the general global situation, LIS programmes in the UK that are accredited by the Chartered Institute of Library and Information Professionals (CILIP) include teaching and training courses (CILIP, 2013, cited by Wheeler & McKinney, 2015). Something similar happens in the United States of America (USA) since the 1990s, as most of the LIS programmes accredited by the American Library Association have courses related to teaching (Walter, 2008).

Houtman (2010) states that library professionals may not be prepared to teach. From her study, in which she interviewed eight Canadian librarians, we can summarize some of the

challenges related to our limited training in education and the dynamics of our work within a library. It was found that library professionals

a) provide too much information and too many demonstrations in teaching activities, which is hard for users to assimilate and presents challenges in structuring sessions;

b) are required to deliver large amounts of information in short sessions, or even in a unique session;

c) have difficulties to develop instructional designs, lesson plans and classes;

d) lack strategies for working with different group sizes;

e) are required to show various software tools, websites and applications, so it is challenging to prevent sessions from being merely a demonstration with some educational value appended;

f) are not necessarily prepared for teaching given their experience in guiding users;

g) effectively reveal the importance of the teaching content to our users in their endeavours, in order to maintain their attention, engaging them and enabling meaningful learning;

h) may not be trained to teach and educate, but any techniques and theories learned are significant assets which aiding learning 'as we go' although librarians are usually very good self-learners; and

i) should find enjoyment in teaching others, presenting and speaking in public, especially because in previous roles and before working in libraries (particularly academic ones), these were not considered traditional functions.

Some librarians may exhibit issues of anxiety when teaching, related to speaking in public, preparing for lecturing, handling difficult questions, having to manage large groups, lack of teaching training, and also because of the additional work and demands that teaching-related activities may exert on top of their other more 'librarian-like' duties (Davis, 2007; Walter, 2008). Wheeler and McKinney (2015) established that some of them might not be so confident about their teaching and do not see themselves as teachers, nor might they think of themselves as teaching, even if they do. Librarians can be successful teachers, as Bewick and Corrall (2010) found, when they surveyed 82 UK

academic librarians, most were confident with their teaching and their knowledge about it, which they mainly gained from development programmes at their jobs, trial and error in their practice, peer interaction, conferences, as well as from short or extended courses; although they highlight that the ideal would be that librarians get access to teacher education content within their professional training. According to Davis (2007), librarians who do not enjoy teaching cited issues of anxiety as the reason for this, but she found out that about three quarters of the librarians she surveyed enjoy it.

Nevertheless, we should accept that our lines of work are currently closely tied to teaching, as we help others and we strive to train our users to become independent, so they can solve information problems by themselves in the future; which is a value of our work philosophy that is closely related to lifelong learning. Thus, we have to reflect deeply upon our practice and on how we can teach information skills and about information, research management and production to others. Apart from this, it is necessary to find out more about which educational content librarians should learn more about to enhance their teaching practices. Although such inquiry can be part of further research, the librarians surveyed by Bewick and Corrall (2010), provide us with a non-exhaustive list of content we should learn about to improve our teaching: a) learning styles and abilities; b) teaching theories, techniques and methods; c) educational planning; d) curriculum work; e) making our teaching dynamic, engaging and interesting; f) developing support materials and learning activities; and f) learning to evaluate, assess, provide feedback, and enable reflection. The authors highlighted that the main weaknesses they found were on teaching and learning theories as well as in developing learning activities, and few librarians conduct assessment.

The challenges faced by librarians who teach are problematic and are not easy to overcome, but we need to do so, as society and educational institutions are demanding us to assume teaching roles. According to Walter (2008), during the past forty years, curricular advances, university demographics and the role of ICTs in education have led us to this requirement and having teaching skills is a current advantage in the job market, especially in libraries. The development of such skills could provide librarians with

opportunities for changing their career to full time teaching, although this requires both developing professional skills and committing to a professional teaching identity.

Career change

Given the need for librarians and their new roles, why would a librarian want to change their career? According to Lambert and Newman (2012), it was previously common for people to have a single career throughout their lives, but nowadays, we are more used to individuals changing career paths during their lives, even more than once. The factors motivating other professionals to change their careers to librarianship include common elements common to other careers, such as better opportunities, burnout, the search for better working conditions (Lambert and Newman, 2012)

There are models that divide a person's career in different phases or stages. Hall (1976) divides careers in four: the exploring, establishment, maintenance and declining phases. It is relevant to note that in the establishment phase, the individual shapes a sense of belonging if they are at an acceptable job and they have a wish to settle down.

Feldman (1988) developed this model to include: a) in the exploring phase, individuals evaluate their fields of interest and capacities; b) during the trial and establishment phases, individuals find a job and adapt to the organization they are working for, although some anxiety may arise from facing new challenges and assessing the effort they must put into their work; c) in a mid-career phase, the individual assumes upon more responsibilities and the role of mentor, but may enter a competing position with their staff; d) in the late career phase, which includes maintaining and declining periods, strategic decision-making and organizational problem-solving are key, while a tension between the development of their organization and maintaining their values takes place. Zemon (2002) states that toward the mid-career stage, burnout is among the factors that affect career decisions.

Phillips et al. (1994) state that librarians are more satisfied with their line of work and develop a stronger career identity as time goes by, as individuals invest in their careers and they will have fewer alternatives as they mature, although they found that career identity tends to be weakest for early (lowest) and late career librarians. Changing careers

tend to be increasingly difficult with age, particularly because individuals make several investments (time, personal sacrifices, psychological, financial) in their current career (Carson et al., 1996), so the possibilities for a career change decrease.

In reviewing the literature, I was surprised that one of my initial assumptions was completely disproven, as there are no sources dealing with librarians changing their career from a library position to a teaching one. Fontenot (2008) observed that the specialized literature dealing with librarians changing careers is scarce; and years later, this is still the case. Noh (2010) found that, among the professionals he surveyed, there were some university teachers that changed their career to libraries, but not vice versa, and the majority moved from one kind of library to another. The trend of professionals from many different fields changing careers to librarianship might be very common in countries where LIS professional degrees are granted exclusively in graduate studies, as it happens in the UK and the USA (de la Peña, 2009), but this tendency is lower in countries where there are undergraduate LIS studies, such as in Latin America in general.

Some of the reviewed sources report career changes from various professions into professional librarianship (Deeming and Chelin, 2001; Nicholson, 2016); a library director position to organizational development work (Dougherty, 2001); from historian to librarian and then to programmer and entrepreneur (Zemon, 2002); from academic to public librarianship (Edwards, 2002); from librarians to archivists (Johnson, 2002); from a law librarian to a general academic librarian and then to outreach services (Fontenot, 2008); from teachers to librarians, which is a common change (Lambert and Newman, 2012); and from librarian to counsellor and therapist, but interestingly retaining her librarian's traits to motivate counselees' return to education (Bagnall, 1993). However, I could not find any source discussing a change such as the one I want to discuss in this chapter: from academic librarian to university professor; but there is a wealth of literature on topics such as career changes into librarianship, the motivation to become librarians and change careers within the profession, and about librarians as teachers, which are mostly related to IL. Although I could not find other studies about librarians changing careers from working in a library to a higher-education teaching position, this change is not so extravagant because both are service professions that are about collaborating and

helping others (Lambert and Newman, 2012); in both careers, teaching and education are among the most important processes or results from our work.

According to Noh (2010), there are many studies about what motivates people's decision to become a librarian (e.g. Bello, 1996; Deeming and Chelin, 2001; Lambert and Newman, 2012) and their career development within libraries and about librarians' satisfaction with their profession and employment; but claims that studies about career paths are rare in the information field. Bello (1996) states that the choice of librarianship as a career is not necessarily the first a person makes and, hence, librarians are led through this path because of experiences, the influence or others or because there is no other choice available. Large groups of librarians claim to be satisfied with their jobs (St. Lifer, 1994), even studies with second career librarians have found high levels of satisfaction with their career change to librarianship (Deeming and Chelin, 2001).

Noh (2010) studied Korean librarians' career changes and determined certain patterns that influenced such movements, particularly that many of the librarians who participated this study came from different backgrounds, but they moved from one type of librarian position to another (as for example from public to academic librarian), then, among the most important reasons for career change include: compensations, job conditions and organizational culture. Interestingly, he pointed out that in Korea it is not common for professional librarians to get jobs outside of libraries, while there are library staff working without professional education in the field (18% of the librarians and 44% of the chief librarians he surveyed did not have studies in information science); both issues might not be so present in countries such as USA and the UK, but they are in Latin American countries; where it is not uncommon to see library staff and even library directors without higher education studies, or coming from very different professional backgrounds.

Edem (1999) studied career advancement obstacles for librarians in Nigeria, determining that professional requirements, institutional requirement of publishing in journals, the difficulties in climbing the organizational ladder, and librarians' educational gaps were among the main obstacles. Professional achievement has been important for academic librarians, as they produce satisfaction with their career, but there are few opportunities for promotions to advanced positions within libraries; particularly within libraries, because

they are typically flat organizations with very few management positions and levels (Holder and Lannon, 2018). The issue of stagnation in the library can be frustrating, it can hamper work achievements and individual well-being and can cause dissatisfaction (Kong and Goodfellow, 1988; Phillips et al., 1994; Carson et al., 1996), which may move librarians to change careers. Particularly in the USA, some librarians have been granted faculty status after many debates in universities (Kong and Goodfellow, 1988); although this is rarely the case in the developing world.

Ball (1997) examines the growing issue of flat organizations that do not offer as many job security or promotion opportunities to employees as in the past, which is something that affects staff retention and motivation. Arguably, this occurs in many libraries, even university ones and may be among the reasons why librarians would wish to change careers, not just change employers. Fontenot (2008) states that despite the positive aspects related to reference work, it also entails some burnout and the individual may wish to decide to do something before showing their stress to their coworkers and patrons, such decision may involve changing their career, which he states may have a positive effect on the person. Davis (2007) surveyed more than 600 academic librarians and found out that more than half would consider changing their career.

According to Newhouse and Spisak (2010), librarians point out some unfavourable issues with their experiences working in the field, such as gaps in their education and training needs, working conditions, relationships with senior staff, high volume of work, lack of appreciation and feedback, low salaries and working in rigid organizations, which are issues that may discourage many new professionals, because they clash with our -almost universal- mantra of 'librarians as agents of change.'

I became trapped within the reference librarian position throughout my LIS career (if I count my years as a student, but also working in libraries, that would be 17 years). I spent two years stuck after graduating f PhD. The issue of being the sole reference librarian in the libraries I have worked in started to weigh heavily, as many responsibilities depended upon me; I started to have an increasing number of disagreements with the library management. This resulted in an increasing sense of burnout, which motivated me to seek alternatives, enhancing my research career, by entering into a publishing overdrive,

in order to have more work opportunities as a university professor. I already had a decade of experiences as an IL researcher and practitioner and delivered university courses at undergraduate and graduate levels as the main lecturer. Could I turn that in my favour and commit fully to research and teaching? In the next sections, I provide some consideration that may be useful for IL practitioners, as well as lessons learned from both perspectives regarding IL instruction, as a librarian and a professor, together with recommendations about the instruments we can use to assess our work from both perspectives and results from the application of those instruments.

Information literacy, its practice and instruments to assess initiatives

The importance for students, teachers, researchers, educational institutions and for society in general of IL cannot be overstated. Its continuing relevance is highly pertinent in educational environments for enabling and enhancing the use of information resources while fostering critical thinking, as well as facilitating and strengthening academic and research activities (Sanches, 2019). Librarians have become more immersed and there work more embedded in learning activities and even in the curriculum through increasingly formal IL activities (McGuinness 2009).

IL as a research and practice area for librarians began in the 1970s and 1980s as an evolution of bibliographic instruction (Davis, 2007). Its concept and limits are still very contested, particularly with the emergence of many newer terms such as digital literacy, new literacies, literacies and media, and IL. These and many other concepts have been widely discussed, and many sources refer to their subtle differences (I recommend Bawden, 2001 as a starting point). It would not be useful for the purposes of this chapter to add to that discussion. Instead, given the topic of *Future Directions…* and the focus of this chapter, I will be using IL as a very broad and far reaching term, given the fact that it is the original one used within LIS and also because of the ubiquitous nature of technology. Hence, throughout the rest of the chapter, I use the term IL to refer to basic information skills that an individual requires to successfully seek, use and evaluate information in general, as well as those involving similar tasks in digital environments, using ICTs.

Reference librarians are those who provide support, advise and train users to access knowledge (Reference and User Services Association [RUSA], 2016). Given the characteristics of the Latin American country where I have worked as a reference librarian, we redefined this role as a way of raising awareness and institutional recognition of its importance; because, as strange as it may sound, in Latin America, it is very common to find only one reference librarian per library, even in university libraries. Another challenge they face is that the community they serve, in general, does not know what a reference librarian is. So, we renamed the reference librarian positions as Information and Learning Development Librarians (ILDLs) (Machin-Mastromatteo et al., 2014; Machin-Mastromatteo, 2015).

An ILDL's profile includes information retrieval, organization, management and dissemination; mastery of ICTs (e.g. Microsoft Office suite and software related to information and research management, as well as digitization and digital documents) and information resources, so they can easily move within physical and digital environments; ILDLs should also know about knowledge management, IL, collection development, planning and management, intermediate statistical and research methods knowledge, command of English at an advanced level. An ILDL must have a bachelor's in LIS, but a master level degree is desirable, and it helps if the individual is a researcher in LIS. It is important to note that in English-speaking countries, LIS professional education is usually offer at a graduate level, but in Latin America there are many bachelor-level LIS programmes.

Other desirable qualities in ILDLs are basic-level use of content management systems, hypertext markup language, social media, and use of audiovisual editing software. Personal traits must include independence for making decisions, proactivity, enjoying teaching others and a commitment toward improving users' conditions. ILDLs support the learning and research activities of all the kinds of users and hence they are information experts, which involves effectively working, evaluating, researching, planning and providing training by considering information needs, types, structures, processes, technologies and environments.

RUSA's (2016) document about professional competencies was very important for defining ILDL and our IL initiative. Of particular importance are those competencies related to the development of an IL initiative that impacts the institution where it is implemented, such as: a) conducting collaborative work; b) establishing alliances with other stakeholders to strengthen library services, the IL initiative, and even positioning the library in such a way that it is present within the institutions' processes and decisions; c) ensuring that IL is integrated to all library services, including training other staff, especially those that are not professional librarians; d) implementing communication and dissemination strategies (mainly using social media and various promotional resources such as bulletins, alerts, podcasts and videos, to reach users in different spaces) to foster learning, participation, engagement with the library and showcasing the value of the library's services; e) continuously assess and conduct research on the initiative itself, from its various stages such as planning, piloting, implementation, evaluation of results.

As a parenthesis, it is relevant to point out another Latin American reality in libraries, which is related to issue 'c' in the list above: a significant number of the staff do not have professional degrees; this includes those in charge of circulation services, cataloguing, and it might even include management staff. A way of alleviating this is to hire reference librarians with strong profiles, but as I stated before, this is sometimes limited to just one per library. First-world LIS professionals may find it strange that reference librarians perform the most specialized tasks in the library. If so, you must keep in mind that other roles such as liaison or subject librarians are not so present in Latin American libraries, where it seems that the reference librarian has developed as the sum of all these roles.

Conducting proper planning, piloting, implementation and especially evaluating the results from the IL initiative are particularly important processes, because they will ensure that the IL initiative is capable of: a) being useful for all kinds of users; b) innovating, which can impact the IL initiative or the library, e.g. ILDLs can make collection development decisions and they can even enable user-driven development; c) fulfilling its objectives (especially that the user community is improving and that we are developing independent users); and d) growing until we can completely embed it in the parent organization.

All these implications are challenging to handle, and they involve much work, but these recommendations emerge from my experiences coordinating IL initiatives and training colleagues. The topics that colleagues wish to improve are, in no particular order: a) strategies for searching in academic databases and their new tools; b) knowing more about the resources that are available for each institution; c) learning about new ICTs and resources; d) generally improving teaching skills and learning strategies they can apply ; e) knowing more about open access (OA) databases and resources; f) increasing the portfolio of information resources and tools; g) optimizing the time taken over information seeking.

The remainder of this chapter will have a practical focus on designing and using instruments for assessing and measuring IL initiatives, from the perspective of a university librarian and a university professor. In planning, it is useful to write a short document where we set the bases for our IL programme. A justification is a good place to start, as we would do for a research project: by determining and listing the main audience for, and the stakeholders, detailing what they are, how they can affect, benefit or profit from the programme. Then, we determine our users' needs from the perspectives of existing and potential users, keeping in mind the needs of both the institution and surrounding community.

The programme must respond to the following questions: what, who, for whom, how, for what, when, in which ways, and with which resources; as we have defined our stakeholders in a previous step, a SWOT Analysis can be a very useful tool. Other instruments we can employ at the planning stage are user studies and usage statistics, analysing frequently asked questions, and conducting formal interviews with key members of each stakeholder group. Interviewing the teaching staff has two aims: a) determining their needs and what we can do for them (e.g. discovering the information deficiencies of their students); and b) involve them as allies in the development of the IL programme. It is important to analyse institutional documents and plans, because institutional characteristics and endeavours can assist in distinguishing and then fulfilling institutional needs; having this kind of approach helps to find ways of including an IL philosophy in future institutional documents, such as mission, strategic plans and policies,

otherwise known as 'infiltrating IL'. We can also see this as incorporating the library through IL to an institution, the essence of embedded librarianship, as summarized by Shumaker (2012).

It is necessary to assess the library's IL activities in order to determine if the programme is working and fulfilling its purpose and objectives to evaluate the extent to which our users are learning and are satisfied with it. In order to measure learning and satisfaction which is arguably more difficult to do, I suggest the use of different kinds of instruments that are presented in Table 1. The first column shows the different instruments, the second states the corresponding type of instrument (quantitative and/or qualitative), the third establishes what each instrument measures (learning and/or satisfaction), and each instrument's application mode (individual and/or in group). In the next section I include two examples of questionnaires used.

Table 1. Types of instruments used to evaluate IL initiatives

Instrument	Type	Measures and/or assesses	Application
Questionnaire or survey applied before starting the workshop (diagnostic pre-test).	Quantitative / Qualitative	Learning and satisfaction	Individual
Follow-up questionnaire or survey after finishing the workshop (post-test).	Quantitative / Qualitative	Learning and satisfaction	Individual
Unique questionnaire or survey after finishing the workshop (post-test).	Quantitative / Qualitative	Learning and satisfaction. It may be less tiresome for participants to fill out only one instrument. If this is the case, it is best to pick this type.	Individual
Learning evidence or students' assignment portfolios.	Mixed methods	Learning, skills, results, understanding. Evidence can consist of essays, presentations, screenshots, videos or audio.	Individual
Interviews	Qualitative	Learning and satisfaction of students. Interviews also allow the gathering of insights into skills improvement, feelings, opinions and perceptions of students.	Individual
Focus group	Qualitative	Learning, satisfaction, level of improvement, feelings, opinions and perceptions. It can be combined with a survey, questionnaire, or an activity. Focus groups are best implemented if participants have experienced several IL workshops or a full training programme.	Group
Recording participants' computer screens during workshops.	Mixed methods	Learning, steps taken to solve a problem, common errors, concentration, interest in the workshop, understanding. The use of these recordings must be done with students' consent	Individual

		and adherence to ethical and privacy policies and agreements. Their analysis is time consuming.	
Standardized tests	Quantitative	Learning, level of competence, steps taken to solve a problem. There are few IL standardized tests, but they are an outstanding complement to our instruments and some of them compare our results to other institutions (see Lau et al., 2016).	Individual
Rubric	Quantitative	Learning, problem-solving and application of knowledge. This may be a more objective evaluation type, which is applied over students' work. They have to be provided with guidelines on what is expected from them, be taught how to fulfil such guidelines and then the rubric serves to measure how well they handled the relevant requirements. The issue is that it might not be possible to assess why they cannot comply with some requirements if we do not plan to ask them about it. Keep in mind that rubrics and standardized tests cover a weakness of other more subjective instruments; namely, that you have the limitation of asking students about their own level of competence and thus you will gather answers on what they think such level is. Rubrics and standardized tests allow the measuring of the level of competence more objectively.	Individual

These instruments can be used to evaluate the IL initiative and to do so is vital, as I highlighted above, because we need to determine if our users are learning with our IL activities and if they are satisfied. Conducting such evaluation allow us to gather evidence and data from our work, which can be useful for accreditation and research purposes; it can also help in establishing or developing institutional indicators. Although I focus on evaluating learning (which can have cognitive, emotional and social implications) and satisfaction, Table 1 includes other aspects that these instruments can help in evaluating. Apart from deciding the elements we wish to evaluate, before designing or adapting instruments, it is useful to question why we are going to evaluate our IL activities, by answering questions such as: what to evaluate, what have students learned, how they feel about it, are they actually learning, are we really measuring what we intend to measure (validity, trustworthiness), is our way of evaluating consistent with IL standards, how challenging are the tasks we are using for the evaluation, are we considering different IL skills/levels of difficulty, will everything we are doing be useful for the workplace/lifelong learning (Lau, 2006).

Instruments employed from a librarian's perspective (2013-2017)

In the last IL initiative in which I was involved in a Mexican library, we decided to establish an IL programme, called Information Culture Development (ICD), with the aim of positioning the library as one of the engines of our higher education institution (HEI). As such, ICD was developed through four main working axes, which contained different activities:

- Axis I. Curriculum and learning support through IL: providing support for the development of courses and curricula; engaging in collection development processes (digital and print) and evaluating providers' offers; developing promotional materials, strengthening the library website, developing and implementing a communication strategy for social media, which obviously includes the production of original contents (e.g. images, text, audio and video).

- Axis II. IL development: developing workshops, courses and other training activities; and developing tutorials in video about the use of information resources.

- Axis III. Research and scientific communication support: offering digital reference and documentary provision services; providing proofreading, support and advice for research projects and their derived products.

- Transversal Axis. Evaluation and communication of results: this axis involved improving the ways in which IL data and also library usage data were collected, analysed and reported to university authorities for strengthening institutional indicators; new indicators were developed, and standardized tests were employed (see Lau et al., 2016); all library staff were also trained, mainly on IL and for improving their functions; we improved library processes and their manuals; and we provided support for national and international accreditations.

In Table 1, I suggested the use of seven different kinds of instrument that can be used for evaluating any IL initiative or programme to assess different elements. Table 2 below presents three examples of such instruments, as we used them in the ICD program, that practitioners may adapt for their use: a diagnostic questionnaire, a follow-up questionnaire, and an interview intended for faculty staff. The table includes the types of

questions that each of these instruments may include and what each question allows measuring, either learning or satisfaction.

Table 2. Examples of instruments used as a librarian, their questions and what they measure

Instrument 1. Diagnostic questionnaire, to be applied before the workshop starts (pre-test)	
Measures learning	1. How do you usually _____ (e.g. search, retrieve, read, research, cite)? This open question can be adapted by replacing the blank space with the verb related to the main skill or activity developed in the workshop.
	2. What can you do with _____ (e.g. APA Publication Manual [or similar, depending on each institution's choice of standard], name of database, search engine or reference manager)? Open question to adapt by using the name of the resource, service or software that the workshop is about.
Measures satisfaction	3. Have you ever used _____ (e.g. APA Publication Manual, name of database, search engine or reference manager)? Binary question (Yes/No) to adapt by using the name of the resource, service or software that the workshop is about.
	4. What is your experience with _____ (e.g. APA Publication Manual, name of database, search engine or reference manager)? If the previous is answered with a yes, use this open question with the respective name of the resource, service or software that the workshop is about.
Instrument 2. Follow-up questionnaire, to be applied after the workshop has ended (post-test)	
Measures learning	1. What did you learn in this workshop? Open question.
	2. How do you think you can use what you learned? Open question.
Measures satisfaction	3. Please rate from 1 to 5 the following workshop elements (1 corresponds to poor and 5 to excellent). Close-ended question with a Likert-type scale for gathering students' perceptions of the quality of variables such as the following: a) classroom's resources and equipment; b) workshop's content; c) practical exercises; d) learning strategies employed; e) trainer's performance; f) originality; g) workshop's usefulness for your endeavours. Variables can be added or removed, depending on the workshop's characteristics.
	4. Highlight at least one positive and a negative aspect of the workshop. Open question.
	5. Did this workshop meet your expectations? Please indicate why or why not. Open question.
Instrument 3. Interviews with teachers	
	1. In what ways have the IL initiatives aided you in your academic endeavours?

Measures learning & satisfaction	2. Have you noticed improvements in the library, specifically related to services for faculty staff, digital platforms and promotional materials?
	3. Have you noticed any IL improvements in your students, specifically regarding their academic performance and projects?
	4. How do you think that IL initiatives are supporting teaching, learning and research practices in the university?
	5. Where do you think we should make more efforts? As an academic, what actions or strategies would you like the library to offer?

Further details about ICD's design and results are available in other publications (see Machin-Mastromatteo et al, 2014; Machin-Mastromatteo, 2015; Lau et al., 2016). However, in the following section, I summarize the results gathered with the instruments described.

Results gathered as a librarian

This section includes a summary of the most relevant results gathered through three data collection stages for ICD. Although more activities were conducted and more results were obtained, these are the most relevant for the purposes of this chapter and were those in which I applied instruments such as the ones shown in the previous sections (see Tables 1 and 2). Davis (2007) questions if we, as librarians, should teach IL skills within the curriculum or in separate sections. There are clearly advantages and disadvantages in each approach. The amount of time we got for teaching such skills, as highlighted at the beginning of this chapter, will determine how we do it and with which methods. If we have too little time, our sessions can turn into just quick demos or informative sessions about our resources. If we have too much time with a group, particularly with undergraduate students, we might struggle to keep their attention. Then, if we teach a full course on IL skills, the challenge is to develop a semester-long curriculum that is interesting and useful for students in all fields, which we may try to tackle by connecting the course's contents and activities to real-life information problems and needs. ICD was a driving force that helped, in a short time, to establish a mandatory course on information management for all first-semester undergraduate students, but this topic goes beyond the aims of this chapter. The three data collection stages were conducted in the context of a short course

for teachers, one course for first semester students enrolled in an undergraduate programme (both courses were part of ICD's pilot stage) and by interviewing teachers with whom a partnership based on IL efforts was established. A summary of the main results is presented next.

Course for teachers

A group of 58 teachers participated in an IL course within the ICD programme, which included academic databases (one two-hour session), the use of Mendeley (one two-hour session), a short seminar on research methods and scientific writing (8 hours divided into 4 sessions), and after it, 81% of the teachers presented a draft of a research project about their teaching. Results from the diagnostic questionnaire employed (see Table 2) showed that 44% had used academic databases before, but 9% percent stated that they could not find what they were looking for in them, while 6% found that the systems are difficult to use. From this survey group, 53% consistently and exclusively use the Internet in general for retrieving academic information, only 10% stated that they consistently used the subscribed databases, 9% use printed books, 8% use Google Scholar, only 2% claimed to have used the library catalogue. Regarding the use of Mendeley, only 2% had used reference managers before, 61% claimed to save academic and scientific documents in folders in their computer, 14% save them in a dedicated USB drive, while others provided answers such as in the favourites in their Internet browser, email or the cloud. By assessing their research projects, some areas of improvement that I identified were: clarity and structure of their writing, use of sources, citation style and organizing sources in the body of the text; increasing the use of appropriate information sources.

In the follow-up questionnaire (see Table 2), teachers evaluated the course. For 40% it was their first library course, 26% stated that it was a better course than those previously offered by the library, others thought it was similar (17%) or worse (17%). The areas for improving the course that teachers highlighted were: having more practical activities, having a better balance between what is optional and mandatory, making available a reading list related to the course, adding advisory sessions, revising durations and schedules, dividing the group into smaller subgroups according to competences (e.g. proficiency using ICT); encouraging more collaborative work and active participation;

improving computer equipment; demonstrating tools' usefulness more clearly. The teachers stated that the digital tools learned throughout this course can help them improve their teaching practices (26%), conducting research (17%), and managing a personal digital library thanks to Mendeley (11%). The highest rated elements of the course were: the course's contents, the instructor's performance, and the usefulness of the contents for their endeavours; while the lowest rated aspects were originality, learning strategies, and practical exercises.

Course for first-semester undergraduate students

A diagnostic and follow-up questionnaire were respectively applied at the beginning and at the end of each stage of the course, circulated to 13 groups of first-semester undergraduate students (188 students in total). The first stage of the course was about academic databases and the second was about the American Psychological Association's (APA) Publication Manual; each part consisted of a two-hour-session. The following is a summary of the results.

The diagnostic questionnaire revealed that 69% had used databases before, but 63% mainly use the Internet in general to retrieve information, 17% consistently used the databases subscribed by the library, 12% use print books, and only two students claimed to have used the library catalogue. They mostly knew that through databases they could retrieve reliable information (39%), locate specialized information (32%), and information for their classwork and for conducting research (24%). Their experiences using databases had been good (31%), but they thought that searching and navigation was complex (15%); some could not find what they needed (13%) and complained that there are very few platforms in Spanish (10%). Regarding APA, 43% had used them before, but when asked how they usually cite a document, 57% stated that they just copy documents' URLs and 19% did not know or did not answer. However, 26% recognized from the start that APA is a formal and standard way of citing and referencing sources.

The follow-up questionnaire revealed that, thanks to the course, they could learn more about writing academic papers (75%), accessing the databases (42%), searching them (39%), using APA citation style correctly (24%), retrieving and downloading valuable

information (23%), creating personal accounts (14%), refining search results (14%). Half of the students shared the opinion that knowing more about using databases and APA can help them perform better in academic work. Interestingly, students' ratings of the course's elements were similar throughout all the evaluated elements, although their ratings were much lower in the APA course. The highest-rated aspects were learning strategies used, instructor's performance, and usefulness of the contents for their endeavours; while the lowest-rated were originality, practical exercises, and classroom resources and equipment. The databases part of the course fulfilled the expectations of 82% of the students, while 77% thought that about the APA session.

Interviews with partner teachers

I interviewed a group of 16 teachers who benefited from and collaborated with ICD's initiatives. They stated that they had received adequate support regarding information seeking, complementing the bibliographies of their courses, and for their research. ICD has furthered their understanding of digital information services and the promotional materials, and in general, the communication strategies implemented through email and social media have kept them updated about new acquisitions and available information products. Most interviewees recognized that the library has gained a wider reach with faculty, that ICD's courses were more complete and better than previous courses offered by the library and have helped them access more tools for conducting research.

Teachers observed an improvement in their students' handling of information sources, particularly their use of higher-quality digital information sources; fewer students were asking them questions such as where they could seek information for doing an assignment, and they were more careful in citing information sources. They agreed that the key for improving students' use of information is for teachers to promote them in class and require them to use and cite reputable sources in their assignments. According to the teachers, ICD's roles are to find more collaboration opportunities with teaching staff and to keep providing support to students and staff. They observed that teachers tend to use the same information resources every semester in their courses, because they might not know that they can contact the library for help, so promotion and outreach are very important. Moreover, there are teaching staff that use the same printed sources and such

a practice is transmitted to their students who, in turn, do not search for other sources; hence, teachers and students must be encouraged to use digital documents. In general, teachers said they wanted students to develop excellent IL skills.

Instrument employed from a teacher's perspective (2017-2019)

Between 2017 and 2019, though having changed jobs from librarian to a full-time teacher, I was still interested in developing IL skills and hence I have been including some sessions in all my courses. In the case of undergraduate courses, I teach students the basics of information seeking by using the databases to which we subscribe as well as Google Scholar, and also the use of APA; as the embedding of IL-related contents was limited in these undergraduate courses and I did not apply the survey instruments that I applied at the graduate level, I will not go deeper into the undergraduate experiences as a teacher. Instead, I will focus on what I have been doing in my two main graduate programmes (Master in Educational Innovation [MIE] and Doctorate in Education, Arts and Humanities [DEAH]), which are research-centric and have two main graduation requirements: the publication of an article in an indexed journal (in Latindex, Scielo, Redalyc, Scopus and/or Web of Science [WoS]) and the preparation and defence of a thesis. The research-centric nature of these programmes provides excellent opportunities to include IL sessions. I tackle the following IL-related topics: a) search tips; b) indexes; c) commercial databases; d) OA databases; e) APA; f) Mendeley; g) Writing tips for Word; h) Journals' quality criteria; and i) Publishing anecdotes. I include and collate these topics within the regular lectures and discussions of the course's topics and if any doubts arise during the semester, we go back and discuss or explain the IL-related topics again. In my teaching of these topics I try to combine my librarian side with my current position as a professor (as Bagnall, 1993 did). I mix and embed in my courses my librarian skills and experiences, as well as those that I have developed as a researcher; which are very useful assets for teaching in these kinds of academic programmes in which we must help students develop research and at the same time develop them as new and independent researchers. As instructors of new researchers, we must also take into consideration the dynamics of the knowledge economy, bibliometrics -because every researcher, regardless of their field, must have at least a basic understanding of bibliometrics- and of information and data

overload, as well as the challenges of evaluation systems for educational institutions and researchers; because nowadays researchers' skills involve embracing high standards regarding research outputs, rankings and their associated metrics (Sanches, 2019). The way in which I implemented IL into the courses I have been facilitating is through:

a) Introducing the course's syllabus and its basic concepts. Then, I work with students to create a collaborative tag cloud to develop common concepts related to the course's topics (e.g. for the course Learning Environments that would be concepts such as learning environments, infrastructures, strategies, activities and pedagogical models; for Scientific Writing, it would be concepts such as syntax or paraphrasing);

b) Searching academic databases with them with two purposes: firstly to gather the state of the art in the research field related to the course and to explain to them what the bibliometric patterns that we can retrieve in indexes such as Scopus and WoS can tell us in any given research field (e.g. who are the most cited authors, what are the most important journals in a research field, where - country and institution - is most of the research conducted); second, for them to be able to use new search tips and tricks they learned me to retrieve better material in order to enrich their theses.

c) I provide a long session on APA. The students have to retrieve digital documents and make citations and references. We also check the citations and references they already have in their theses to improve them. I provide guidance on how to structure their texts and incorporate different kinds of citations. This can be very time consuming, but with dedication, they learn how to use APA and to improve their writing style.

d) Then, I teach them how to install and use Mendeley on their computers and smart devices. The choice of first teaching APA and then a reference manager is deliberate, because one of the features in reference managers is getting the references of any document in a wide variety of formats. It is my belief that you first have to teach them how to build the basic references (i.e. book, book chapter, journal article, thesis, website) by themselves and then let them know that Mendeley can help them obtain the references very easily, provided that the

documents' metadata in Mendeley's library is correct. Sometimes they complain about this, by asking me why I first teach them to do the references by hand. To which I reply: in mathematics, I can't teach you how to add, subtract, multiply and divide with the calculator; you must learn to do it manually. I also highlight that the correct use of a citation style is vital, because if they send an article to a journal and the use of the citation style is sloppy, then they cause a bad impression with reviewers and they might suspect that the contents are also deficient. From ICD's experiences, I could see that during the years 2007-2013, the use of a reference manager was not as common and although more people now know about them and use them, I still consider them a very niche software type. Most of the time, students have a moment of revelation when they see how easily they can create and manage their personal digital libraries, apart from reading, citing and annotating documents; which is much more effective and efficient than saving those documents in computer folders and relying on their operating system's search function, which is not at all effective for retrieving the full text in documents, especially in Windows. I highlight that using reference managers imply a very steep learning curve and a drastic change of practices regarding the use of digital documents, but if we implement the use of a reference manager, we can save much time and have more efficient information practices.

e) After learning more about APA and Mendeley I share some writing tips for Microsoft Word, such as using the search and replace functions, configure paragraphs and headings, create tables of contents, setting multiple paginations in a document, among others. I advise them against using Word's automatic citations and references, as they are rarely correctly used. It is a feature that introduces computer code within documents, and it can lead to issues. Some journals are requesting authors to refrain from using it, as it causes problems with typesetting software. Word might be among the most used software in the world, but most students and even teachers just use its basic features.

f) I usually deliver the lectures about the last two topics (journals' quality criteria and publishing anecdotes)towards the end of the semester, as I require them to write a journal article as the final assignment for my courses, for which they have to use

the publication guidelines of a real journal in the field of education to develop their article. In these sessions, I teach them about topics such as: how to comply with publication guidelines, how to search for the most appropriate journal to publish their research in, the different characteristics of scientific journals and how they are evaluated and ranked, what is peer review, what are the processes involved in scientific publication, and so on. I share my experiences as a published researcher about the challenges and pitfalls, providing them with guidance on how to overcome them, particularly because they have the institutional requirement of publishing an article (apart from defending their theses) in order to graduate.

Table 3. Examples of instruments used as a teacher, their questions and what they measure

Instrument 1. Unique survey after finishing the workshop (post-test).	
Measures of learning	How would you describe your previous knowledge of the content taught in class? Which content do you consider was the most unfamiliar?
	Do you still have challenges with the content? Which? What are the challenges? Please elaborate your answer.
	State two or three things you learned regarding the IL content.
Measures of satisfaction	Rate the following contents taught in class, depending on the usefulness of these contents for your work and studies (e.g. thesis)
	Which content do you think we should focus more on why?
	Which aspects of the IL sessions do you think can be improved?
	In your own experience, how important do you consider IL content for training new researchers?
Instrument 2. Rubric for evaluating an assignment consisting of the presentation of a scientific text (e.g. scientific article, thesis).	
Measures of learning, problem-solving and application of knowledge	Formal aspects: the work is divided into thematic sections, alternating between citations from sources and authors' contributions, avoiding focusing on a sole source for long sections of text. Sentences and paragraphs are of appropriate length and the syntax employed facilitates readability. There is appropriate use of abbreviations and symbols (punctuation, parentheses, quotation marks). There are no consecutive titles; all heading subdivisions include at least a paragraph.
	Content aspects: the problem statement is explicitly declared, it specifies the knowledge gap being addressed, and how the present research is going to proceed. The justification

	of the research is present and its usefulness for different stakeholders is explained. There is coherence across the content, with integration of the work. A critical stance is assumed by the author and any position is grounded in available sources and data. The writing style is clear, direct and there are no spelling or grammar errors.
	Use of information sources: the work is original (anti-plagiarism software will be used). The work complies with the APA Publication Manual guidelines regarding citations and references. A diverse range of information sources was used (a good proportion of international publications, most are peer-reviewed, more than half are from indexed journals [Scopus and/or WoS] and more than half should be in English and current [from the past five to ten years]).
	Briefly describe how useful the IL content was for developing your work and how the skills and knowledge gained contributed to your thesis and how they can support your future endeavours. Please state any challenges you may still have with any of the evaluated elements (this last part enables a space for students to provide some insights into why they could not comply with any of the requirements and, although it might not be typical to include such open-ended question in a rubric, it is important for us to gather such insights; e.g. it allows us to understand why students might still be struggling with specific IL skills or problems).

As shown in Table 3, I used two instruments to assess the experience with the IL content. The next sections of this chapter focus on the design and results of the survey, which was used during four consecutive semesters (2017-2019) of teaching different courses at MIE and DEAH, mainly to assess the perceived usefulness of the IL content of their courses, as well as their learning and satisfaction with such content.

The first part of the survey required two personal details from students, though this did not allow identification: the graduate programme which they were studying, in order to segment them into groups; y requirement (or not) to prepare a thesis as a graduation requirement in their previous academic programme. This second question was added because there is a growing concern that students entering these programmes have serious issues and limitations regarding their information, writing and research skills; because there are many bachelor, master and even doctoral programmes that do not require a thesis for graduation, which may harm graduates' information, writing and research skills. It may even lower the level of the education system as well as harming

society's literacy and produce a negative perception of science, research, innovation and academia in general. Sadly, this seems to be a condition that is worsening through the popularization of euphemisms such as 'teaching-centred institutions' or 'professionalizing programmes', which are used to refer to institutions that do not produce research and programmes that do not require the development and defence of a thesis.

The second part of the survey required students to rate different IL content taught in class by using a scale from one (minimum) to five (maximum), depending on relative usefulness. The content, which had an emphasis on digital technologies, tools and processes, was: a) Mendeley reference manager; b) APA, which is the style officially used in our university; c) Commercial databases, which included the use of platforms such as EBSCO, ScienceDirect, Emerald Insight and Wiley; d) OA databases, which included Latin American resources such as Scielo and Redalyc, as well as international ones, such as SSRN and CORE; e) Writing tips for Word, including how to work in Word under APA's guidelines, e.g. set heading levels and format, tables of contents and checking citations and references; f) Search tips; g) Indexes, particularly Scopus and WoS in order to determine the state of the art, tendencies and main journals of students' lines of research; h) Journals' quality criteria, showing examples of real journals' requirements and explaining how to follow them; and i) Publishing anecdotes, drawn from my experiences in publishing articles.

The survey's final section included open-ended questions about students' previous knowledge on the contents, which topics were the most unknown to them, which required more time to be further explained, which represented the main difficulties, what did they learn, what could be improved, and which topics they consider are the most important for training new researchers. They also had the option of submitting an additional comment.

Results gathered as a teacher

The survey was applied to a total of 53 students from eight groups, two groups per semester (one group from MIE and another from DEAH for each semester) and the data was collected over four semesters (2017-2019). This survey was undertaken electronically. I gave the link to students by the end of the semester and I sent out just

one reminder for eliciting their participation. The survey was completely anonymous and was not mandatory, because the only personal detail asked was to which graduate programme they belonged, so it is not possible to identify individual students from the data collected. Not all students responded, but around 70 to 80% of the total students per group did do so. In order to simplify the presentation of results, they were grouped in four new groups, a group per semester, thus combining students from the two programmes. Basic figures about these groups are presented in the following list and summarized in Table 4 below:

a) Group 1 had 15 students, four MIE (26.7) and 11 DEAH (73.3%). Three students from this group were not required to produce a thesis in their previous academic programmes, one MIE and two DEAH.
b) Group 2 had 9 students, only from DEAH, because I did not have MIE students that semester. One student did not have the experience of writing a thesis.
c) Group 3 had 14 students, eight MIE (57.1%) and six DEAH (42.9%). Students without a thesis were two MIE and one DEAH.
d) Group 4 had 15 students, six MIE (40%) and nine DEAH (60%). Students without a thesis were two MIE.

Table 4. Descriptives of the four groups

Group	Programme	Number of students	Percent	Students without thesis	Percent
1	MIE	4	26.7%	1	25%
	DEAH	11	73.3%	2	18.1%
	Total students	15	100%	3	20%
2	DEAH	9	100%	1	11.1%
3	MIE	8	57.1%	2	25%
	DEAH	6	42.9%	1	16.6%
	Total students	14	100%	3	21.4%
4	MIE	6	40%	2	33.3%
	DEAH	9	60%	0	0%
	Total students	15	100%	2	13.3%

Contrary to expectation, the number of graduate students with no experience of writing a thesis in their previous academic degree was low. The initial expectation was based on three issues: a) the concern with the proliferation of academic programmes that do not require a thesis for graduation; b) the alternatives that some academic programmes offer to students for graduating without a thesis (e.g. internship reports, academic materials, time spent conducting social work; and c) certain general deficiencies in students' literacy and writing skills. These issues cause academics and librarians to fear that, by removing the mandatory requirement of a thesis in academic programmes, the education system is lowering the levels of literacy and research skills, which starts to be evident in the results obtained in standardized tests such as the Organization for Economic Cooperation and Development (OECD)'s Programme for International Student Assessment (PISA).

The survey asked students to rate, in a scale from one (minimum) to five (maximum), the usefulness of IL-related content taught in class. A reliability analysis was conducted using Cronbach's Alpha, which resulted in a high value of α=0.969. Table 5 summarizes the main results obtained regarding these items, in which the groups were sorted again, depending on their response to the question of whether they wrote a thesis in their previous academic programme.

Table 5. Descriptives of the four groups by topic and divided by students with or without a thesis experience

Thesis	Topic	Min.	Max.	Sum	Mean	Std. Deviation	Variance
No (n=9)	Mendeley	2	5	37	4.11	1.054	1.111
	APA Publication Manual	3	5	43	4.78	0.667	0.444
	Commercial databases	3	5	40	4.44	0.882	0.778
	OA databases	3	5	38	4.22	0.833	0.694
	Writing tips for Word	2	5	38	4.22	1.093	1.194
	Search tips	3	5	38	4.22	0.833	0.694
	Indexes	3	5	39	4.33	0.866	0.75
	Journals' quality criteria	2	5	36	4	1	1

	Publishing anecdotes	3	5	41	4.56	0.726	0.528
Yes (n=44)	Mendeley	1	5	184	4.18	1.018	1.036
	APA Publication Manual	1	5	196	4.45	0.951	0.905
	Commercial databases	1	5	187	4.25	1.037	1.076
	OA databases	1	5	188	4.27	1.02	1.04
	Writing tips for Word	1	5	187	4.25	1.037	1.076
	Search tips	1	5	186	4.23	1.097	1.203
	Indexes	1	5	188	4.27	1.042	1.087
	Journals' quality criteria	1	5	187	4.25	1.081	1.169
	Publishing anecdotes	1	5	190	4.32	1.052	1.106

Although the means from these two groups were very similar, the students without a thesis experience, compared to the other group, scored higher on publishing anecdotes, indexes, commercial databases, and APA; their lowest scored topic was journals' quality criteria and the highest was APA. The students that had thesis experience gave higher scores to journals' quality criteria, search tips, writing tips for Word, OA databases, and Mendeley; their lowest scored topic was Mendeley and the highest was APA. These results allow hypothesizing that students' perceived usefulness of the topics taught may depend on how much they have identified the need to know more about a given topic during their progression through their respective academic programmes. Such an hypothesis means that students' current academic needs drive the perceived usefulness of, and interest in the various topics, reinforcing the idea that, if teachers highlight the importance of topics, it can contribute to students' interest in, and perceived usefulness, a belief highlighted by librarians; e.g. a thesis supervisor who neglects the importance of having students work within APA's guidelines will transmit such a lack of interest to their students.

This hypothesis may explain why, for instance, regardless of their experience writing a thesis, the highest scored topic for both groups was APA, the style annual used in the university. Conversely, many students may have not yet seen the importance of a

reference manager, nor the importance of knowing about journals, as they have not yet faced needed to write an article.

Although the sample was small, a correlation analysis using the Pearson coefficient was conducted, resulting in no significant correlations between the academic programme and the thesis writing; these variables did not present any correlation between them and the course content. Students' answers were independent of their programme and thesis experience. Correlations among the contents were significant at the 0.01 level and the highest correlations ($r \geq 0.8$) were between: a) Mendeley and commercial databases ($r=0.856$) and with indexes ($r=0.818$); b) APA and OA databases ($r=0.812$); c) commercial databases and indexes ($r=0.924$) and with publishing anecdotes ($r=0.831$); d) OA databases and Word tips ($r=0.822$) and with search tips ($r=0.872$); e) Word tips and search tips ($r=0.903$); f) search tips and journals' quality criteria ($r=0.802$) and with publishing anecdotes ($r=0.818$); and g) indexes and journals' quality criteria ($r=0.807$) and with publishing anecdotes ($r=0.831$).

We would need to conduct further research into these relationships. However, it is possible to postulate several hypotheses to explain the above correlations: a) students having an increasing interest in publication, due to the graduation requirement of publishing an indexed article, are giving importance to the publishing ecosystem and to the processes behind writing articles, such as reference managers, commercial databases, indexes, journals' quality criteria and are also interested in hearing others' publishing experiences as they have started to see that choosing a journal and getting their articles accepted are not easy tasks; b) students that are progressing with their theses recognize the need to improve their use of the APA guidelines and learn Word tips. They also require search tips and are interested in OA databases to retrieve more specialized literature (this corresponds to the previous hypothesis about perceived usefulness versus need). These latter relationships could be further explained because access to commercial databases is limited in our institution and because in OA databases it tends be more difficult for students to identify a given document type. It is therefore more difficult for them to cite and reference OA documents, as repositories do not always

offer an explicit reference of the document shown on screen, which commercial databases do.

The survey's third and final section included open-ended questions. By using such questions, IL practitioners must be aware that participants' answers will not be exhaustive and thus the data gathered depends on what was most memorable for them and on which they wished to comment; depending on participants' willingness to write answers, sometimes we might not get meaningful responses. However, with these groups of students, there were interesting answers, which were coded and then summarized in the following paragraphs.

Sixteen students said that the topics of the workshop were very new to them and had little or no prior knowledge about them, while eight claimed to have an average level of previous knowledge. Two stated that they had a good level of previous knowledge, and another two said that the workshop allowed them to review these resources and improve their proficiency handling them. One student remarked that 'in bachelor programmes, you do not work with APA in the same way as we did it in the graduate program'. Two students had a very general knowledge of scientific databases and Mendeley, while two said that in their previous academic degree they developed the belief that books were the quintessential information source, but now see the importance of journal articles and digital databases. Interestingly, one student claimed that 'there are few professors that know about or share information about the databases we have access to'.

The most novel and useful content, according to students' answers, were Mendeley (which was an answer provided by 14 students), APA (9), information seeking tips (9), journal indexes (9), databases (7), Microsoft Word tips (5), and journals' quality criteria (2). The following topics were highlighted by one student per topic: OA journals, the use of Boolean operators, anti-plagiarism software: all resources that are based on digital technologies, evaluate information sources and identify their trustworthiness, 'how to use the information I gather in my own texts', and the teacher's publishing experiences.

Students thought that more time should be devoted to the following topics: APA (which was an answer provided by 13 students), particularly invest more time on writing paragraphs with various citation types (2), working on the thesis' structure (2), checking

citation errors (1), checking references and citations on the thesis (1), and working with different types of reference. Students also said that more time should be dedicated to Mendeley (9), how to improve thesis writing style (6), conducting specialized searches in databases (5), how to write and publish articles in journals (4), how to retrieve articles not available in our institutional subscription (2), journal quality criteria (2), research types and methods (1), indexes (1), other research tools (1), and OA repositories. According to one student, 'first semester courses should tackle this content, so we are familiar with them from an early stage in the program'. Regarding the workshop's general duration, one student stated that 'time was too brief', but for seven students, it was adequate.

The topics that represented the main difficulties for students were: APA (according to 17 students), particularly practising, remembering and mastering APA (8), the various citation styles (3), referencing 'strange sources' in APA (1).One student pointed out the issue that various teachers have different interpretations of APA; Mendeley (5); the use of databases (3), specifically making the remote access to databases work (1); information seeking (4), especially finding articles in arts and humanities disciplines (2); the use of indexes (3); difficulties with scientific writing in general (3), but in particular developing an article (1), and 'using more diverse words for connecting sentences in a paragraph' (1); identify journals' quality criteria (2). Seven students claimed that they did not have difficulties with any topics, while one stated 'I need an advanced level workshop to master all these tools.'.

During the workshop, students claimed that they learned the most about: a) Mendeley (according to 17 students); b) APA (14), specifically about citations (5), and references (2); c) improving information seeking (14), evaluating information sources (3), managing information (2), retrieving useful information for research (2), using Boolean operators (2), and sharing information (1); d) databases (10), indexes (7), and access OA repositories (1); e) learn more Word tricks (5), specifically how to do a table of contents (1); f) learn about journal's quality requirements (5), specifically about the format of an article (3), the impact factor (2), selecting a journal for publishing (1), and knowing more about scientific publishers (1); and g) improving scientific writing skills (5), especially to develop the

thesis' structure (3), improving literature reviews (2), using an anti-plagiarism software (2), and 'framing my own project within other social sciences' research' (1).

Ten students thought that all the aspects of the workshop were appropriate. However, others made recommendations for improvement by expanding their length (9), including more practical exercises (7), spending more time with APA (6), particularly to provide more examples (5), spending more time with Mendeley (3), working more directly with the thesis (3), increasing the emphasis on research methods (2), complementing the workshops with video tutorials available to students (2), including more Word tips (2) and databases (1), adding more content about bibliometric indicators and journals' quality criteria in different disciplines (2), and continuing the workshops during other semesters (1).

For information professionals, it is commonly accepted that information skills and ICT skills are vital for research and researchers, but I was curious to ask for insights about if and why these IL-related topics are important for training new researchers. All students agreed that they are indeed important and fundamental, while some of them recognized that researchers must be proficient in the use of ICTs and these topics (5), which form the basis of all research processes (4), particularly those associated with research production and evaluation (3) and are topics that allow improving scientific writing skills (3). Moreover, the development of the skills in question influences the quality of their research output (3), enables researchers to be up to date in their respective fields (2), are key skills that any researcher requires (1), because their appropriate development allow spending less time in activities such as searching for information, structuring references and revising texts. Two students claimed that the content should also be included at undergraduate level, so they have a background to build upon later, at the graduate level, as new researchers such as them face challenges that can be resolved with these IL-related topics One student appreciated that examples and practical activities were conducted with their own research topics and theses and claimed that this resulted in meaningful learning

Conclusion

Although I provided results emerging from the systematic collection of data, I also used my own experiences and observations as a librarian and university teacher. This latter evidence might be seen by some scholars as anecdotal and lacking in scientific value, but action research self-study of our own practices and experiences is a valid avenue and most of the insights deriving from personal experiences are consonant with what other researchers (including myself) have found through the use of other methods.

The issues arising from developing IL initiatives from the library and then from doing so as a teacher are closely related to the challenges highlighted by Houtman (2010) and other sources cited. Although ICD was not my first experience developing, co-ordinating and implementing an IL programme from a library, it was my strongest experience and was where I started being more systematic about planning and the application of instruments. The challenge, as highlighted by Davis (2007) and Walter (2008), is that IL activities present us with an extra workload that is difficult to cope with, particularly if we are in very small teams, because we have to take care of the reference service and thus of the demands of our users at the reference desk, as well as delivering IL instruction (and its planning, design and measurement) as well as our typical administrative behind-the-desk tasks.

During the early years of my IL experience (2006-2008), I started to learn about harnessing the possibilities of: a) grounding the IL initiative in the institution's vision, values and educational model; b) positioning the library within the institution as a dynamic engine in such a way that we start being involved in other institutional processes - developing an IL programme helps us doing this (these first two elements enables the library to gain more importance in the institution and it might then get more recognition and resources dedicated to it); c) IL permeating and improving other library services and products, including collection development; d) the library's IL courses becoming the main instruction-delivery method, but we must also develop others (e.g. flyers, podcasts, tutorials, videos and social media); and e) transcending typical library work and stereotypes by venturing into new functions, ways of working and even in media

production, but requiring the best and most creative human resources to do so (Machin-Mastromatteo, 2009a,b).

The lessons learned after developing, implementing and analysing ICD's results include: a) highlight the role of academic libraries as an educational partner; b) develop partnerships with teaching staff; c) have a wide reach for students and lecturers, as not all of them visit the library; d) have an institutional reconceptualization of the library, including all its activities, resources and possibilities, to make sure that our efforts to embed it in the institution's endeavours are successful; e) take on the challenge of lowering resistance toward reading and help develop deep and critical approaches; f) keep working on promoting the library; g) some lecturers will need our support for conducting research; and h) ensure that IL endeavours are aligned with institutional plans and work toward embedding IL and the library in them. In my experience, the most important element for starting an IL programme is to find and partner with faculty that are frequent library users, that 'get' what we do, and that like books and libraries. Among the effects of such collaborations, our faculty-partners may improve their teaching (Mackey and Jacobsen, 2005). Moreover, the learning community in general may conduct some of their academic and research activities more effectively. They may wish to continue expanding their IL skills and can be more mindful of aspects such as having the most recent and best information available for their work (Sanches, 2019). However, keep in mind that some academic staff can have varied perceptions of IL; some of them might not understand the skills in question and others may not see their usefulness for their students (Webber et al., 2005; Davis, 2007).

From my experiences as an academic embedding IL in my classes, I highlight that: a) if we complain as librarians that we do not have enough time for teaching IL, by increasing the hours dedicated to IL I have seen that it is still not enough and students agree, however, they mostly need support in writing, revising and editing their texts, as well as remembering the nuances of information seeking and management; b) students' perception of the usefulness of an IL topic may depend on how much they think they need to know more about it and that, in turn, depends on the activities they are conducting and on their level of advancement in their academic programme. This corresponds to a belief

held by librarians that students will grant importance to something if they have a need for it, which is why you will be more successful if you connect IL-related content to what students need to know and highlighting such connections; c) the greatest struggles come from using a publication manual; d) do not expect that students and even other teachers will have knowledge of the topic: start from the beginning, if only to bring the classroom to the same level and speed, but do not overdo this, as you might need to divide the larger group into smaller ones, according to their level of IL competence; and e) when embedding IL into research-oriented academic programmes you will be teaching at the highest level possible, so prepare accordingly and invest the time required by students to achieve a considerable level of improvement. As a closing statement, students usually ask me why they were not taught these IL-related contents in such a high level of detail and I candidly answer them that it is because I am the only librarian teaching in their programme.

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