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Aims and Scope

IFLA Journal is an international journal publishing peer reviewed articles on library and information services and the social, political and economic issues that impact access to information through libraries. The Journal publishes research, case studies and essays that reflect the broad spectrum of the profession internationally. To submit an article to IFLA Journal please visit: <http://ifl.sagepub.com>

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Promoting research that intersects with practice and advocacy

Steven W. Witt

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For over forty years, the editors of *IFLA Journal* have strived to publish articles that reflect the work and mission of the International Federation of Library Associations and Institutions (IFLA). This requires a long-standing dedication to channeling the global voice of the library and information professions while promoting research that impacts practice. If one reflects upon past publications and often cited articles from the journal, the diversity of authors, perspectives, and issues are unmatched within the field's literature. Reviewing some of the most frequently read articles that are featured on the journal's website, one sees the depth and breadth of the journal's coverage. Articles focus on topics that remain timely such as freedom of expression, cultural heritage, development, indigenous knowledge, building leadership within the profession, and perspectives from around the globe that inform our professional practice. These articles reflect the strength of the profession as a global field and demonstrate the clear trajectory set by past editors, such as my immediate predecessor, Stephen Parker.

As the current editor of a journal with such a rich and strong tradition, I am quite humbled and more than a little intimidated by the impact of the work that proceeds me. As recounted in the past issue edited by Jerry W. Mansfield, chair of the Journal's editorial committee, the history of *IFLA Journal* sees a publication that has evolved from a chronicle of IFLA activities to a peer-reviewed journal that examines the challenges faced by librarians and information professionals that range from the investigating role of information in society, improving communities, developing inclusive services, supporting economic development, increasing access to knowledge, and actively engaging in the local and international policies that impact libraries and the world's population.

The Lyon Declaration on Access to Information and Development, launched at the World Library and Information Congress 2014, marks a complementary and intersecting initiative to assert and advocate the

role of the profession in cultures and societies around the world. Nearly 300 organizations from throughout the library and development community have endorsed the document, calling upon United Nations Member States to integrate access to information into the post-2015 development framework. Declarations such as the one issued in Lyon in 2014 mark the ambitions and ideals of the library profession and add our voice to conversations that will impact development initiatives for years to come. The important work to advocate the critical need for information access and the role of libraries and allied cultural organizations in facilitating knowledge production is predicated upon the availability of research and evidence. To complement initiatives such as the Lyon Declaration, *IFLA Journal* aims to reflect the profession as a whole while ensuring a diversity of research methods, theoretical perspectives, and levels of inquiry that reflect the breadth and depth of IFLA's membership and remit.

In the past, the Journal promoted research and scholarship pertinent to the members of the association by publishing the best papers from within the annual World Library and Information Congress. In a pre-digital age, this strategy provided a timely and effective means to disseminate knowledge to members of the profession who were not able to participate in the Congress. Through the implementation of a digital repository by which conference papers are made freely available online, these papers are now disseminated quickly. The launch of the IFLA Library provides the opportunity for conference participants to share their work broadly while providing another open-access venue that increases access. This also provides the journal with the flexibility to publish in a different manner.

Beginning with volume 40 (2014) and continuing into the future, the journal will dedicate one issue per volume to a special topic. The inaugural special issue of the journal focused on National Libraries as centers of innovation. Articles are currently being solicited

for the forthcoming special issue focusing on Cultural Heritage preservation that will be guest edited by Douwe Drijfhout of the National Library of South Africa and Tanja de Boer of the National Library of the Netherlands. Articles in this issue will focus on practices and challenges of cultural heritage management in order to contribute to a deeper understating of cultural heritage preservation and highlight case studies and practices from within the cultural heritage community. In particular, the main goal of this special issue is to gather interdisciplinary and interprofessional research on cultural heritage to contribute to both professional practice and policy debates that are important to this topic. Moving forward, *IFLA Journal* will seek to focus such special issues in a manner that encourages exchange between library researchers and practitioners and those from allied fields to inspire wider research that relates to practice and furthers dialogue with other professions ranging from archivists to urban planners.

Although *IFLA Journal* will no longer engage the World Library and Information Congress by publishing papers directly from the conference, the editor and editorial committee seek to work within the association's professional bodies to promote research and publishing that engages the diversity of the profession and speaks to the multiple challenges we face. Research from within our field often highlights the strength of co-authorship networks and their impact on research and innovation within both science and the humanities. To channel the global nature of IFLA's membership, the journal seeks to encourage wider collaboration and networking throughout IFLA

that will inspire research and scholarship on topics important to the profession. These include areas such as copyright and access, information literacy, and the proliferation of standards. One of the strengths of IFLA is that it brings together librarians from varied perspectives and backgrounds to discuss professional matters and advocate important issues. By encouraging and facilitating co-authorship and collaborative research among colleagues within IFLA, the profession will benefit by increasing access to publishing opportunities among members while raising the level of the research and scholarship published in the journal.

As the IFLA membership and library profession looks at recent success in supporting access such as the implementation of the Marrakesh Treaty in 2013 and launch of the Lyon Declaration in 2014, it is clear that there is much research and work to be done to measure the impact and progress of such global initiatives. In addition, we face many challenges that range from expanding the role of libraries to support digital science and data initiatives on one hand to providing access to information in regions faced with economic, political, and environmental difficulties. These are all common challenges shared within the profession regardless of region or nation, and the challenges demand our focused attention to ensure there is a body of research and knowledge available to inform practice, challenge assumptions, and foster innovation. *IFLA Journal* welcomes submissions that employ research to enrich professional practice and guide us collectively as we address the mounting pressures placed on libraries and society.



Academic libraries: A soft analysis, a warning and the road ahead

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Abstract

Networked access to full-text databases has disrupted both academic and corporate libraries from the research process. The for-profit environment, where libraries are less insulated by organizational prestige and historical tradition, has felt the impact of this more immediately. The changes in corporate libraries, as well as their efforts to remain relevant, can provide insight for academic libraries on how to weather the new realities. Academic libraries will need new strategies to maintain their relationship with students, faculty, and the academy to ensure sustainability.

Keywords

Principles of library and information science, collection development, services to user populations, management/administration, academic libraries, special and corporate libraries, types of libraries and information providers

Introduction

One of the reasons academic libraries have been slow to witness the changes that have already taken place in special libraries is partially because of their position within academic institutions. For decades, academic libraries have organized collections, purchased materials, and arrayed a staff of reference librarians to field questions from customers. The need for these activities must now be considered in light of a decline in customer use and the rise in networked resources. Most academic libraries provide a place for quiet study; this will remain a valuable service for students. However, the need exists to invest in and budget for innovation while continuing some traditional services where needed.

It has to be clear to those in academic libraries now that the library's role as a gateway to information is morphing. Faculty and students have other alternatives, some of which have, in fact, been provided by the library itself. While academic libraries are at the geographic center of many campuses, the immediacy of their connection or their relevance to research, teaching, and learning is no longer as obvious (or at

least the perception is such) as it has been in the past. This puts them in the position of losing their institutional pertinence, unless they adapt to the changing information environment.

The case of the corporate library can offer lessons for academic libraries. Since corporate libraries faced these problems much earlier, how they weathered the changes as well as the failures to change offers possible models for other kinds of libraries. Academic libraries can develop strategies to face these challenges and take the necessary steps to adapt their roles and services to prove value to the academic community served.

Background

Corporate libraries exist in a profit-driven world and are, therefore, subject to the changes in the economic

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and strategic situation of their parent institution. In the past these libraries appeared to be in a volatile world and at the mercy of the whims of management. Corporate managers in turn have been pressured by stakeholders eager for a return on their investment and/or by profit goals that have to be met.

The actual volatility of corporate libraries was not studied in any serious manner until the publication of *Closing the Corporate Library* in the 1980's (Matarazzo, 1982). The author of this study connected the failure of these libraries to a disconnect in meeting the needs of the parent institution. The corporations that started these libraries had a short-term need for extensive research. At some firms, there was never a plan to keep the library for the long term. Other corporate libraries lasted longer, but only until management faced a real or projected financial crisis. This event caused company officials to evaluate all services. It was during this evaluation that the link between the need for the library and the company's health could not be demonstrated.

Company libraries enjoyed a bit of a new lease on life with the advent of online searching. Company librarians mastered the mechanics of searching and retained access to the expensive databases. This monopoly lasted until the database aggregators made searching much easier, marketed their products directly to end users, and librarians became a bottleneck in the research process.

The spirits of company librarians were lifted in 1990 with the publication of *Valuing Corporate Libraries: A Management Survey* (Matarazzo and Prusak, 1990). Company libraries used this publication to justify the library to management directly and indirectly. Many trade and professional publications carried a report of this study via a marketing piece authored by the firm that co-sponsored the research. In truth some of the columnists slightly revised the marketing release and published it as their own work. So clever was this report of the research that the finding was obscured: two-thirds of the corporate managers surveyed could not identify the value of their library!

In 1993 two highly respected researchers published "Blow up the corporate library" (Prusak and Davenport, 1993). They argued that these libraries were being left behind and growing increasingly irrelevant just as managing information was becoming more essential to corporate success.

The same author who produced the aforementioned 1990 report repeated the study with the same firms in 1995. This report, *The Value of Corporate Libraries: Findings from a 1995 Survey of Senior Managers* (Matarazzo, 1995) documented 20% fewer libraries

in existence from the earlier sample, smaller staffs and still, two-thirds of the corporate managers had no idea of the value of their library. Without the earlier marketing genius to spin the results of this research, the report had to stand on its own and its reception by practitioners was very cold at best.

As early as 2006, the growing financial crisis had had a further devastating effect on corporate libraries. In 2007, the authors of the present article published "Corporate Score" in an effort to emphasize the crucial need for corporate libraries to demonstrate proof of value to their organizations and offering a model for this evaluation (Matarazzo and Pearlstein, 2007). Judging by the further reduction in the number of corporate libraries since then, the continuous decline in the number of staff, and the loss of members in the Special Libraries Association, this effort was less than successful in stimulating the level of alarm necessary to help stem the overall decline in corporate libraries.

In considering the future of corporate libraries, the evidence is there that, in troubled times, the customers cannot save them. They are typically in no position on the corporate ladder to do so. Rather, when cuts are being made, most of the library's customers keep a low profile. If department managers are questioned about the library, they will often deny use by their staff in an effort to keep their own units from further cuts and, thereby, let the library be sacrificed instead.

There is no question that the corporate world is making every effort to limit expenses, increase profitability, and look for other ways to reduce costs (Matarazzo and Pearlstein, 2014a). The money saved is being used to buy back shares and/or invest in new areas. The capital not spent on the library and other "nonessential" services and personnel can then be used, for example, to grow the business through acquisition.

Why does this matter for academic libraries?

Many firms all over the world have faced a confluence of pressures. How company libraries have responded to these pressures is instructive for all types of libraries in both a positive and negative way. Any library manager who does not anticipate the inevitability of these pressures in time to respond in a positive way is either foolhardy, or worse, self-destructive.

Bain & Company, Inc. the global management consulting firm, surveyed over 1200 corporate executives from all over the world (Rigby and Bilodeau, 2013: 1). The results revealed the low confidence levels of senior management in the slow economic recovery.

New challenges had led these companies to focus on revenue growth, cost reductions, and increased profitability. The organizations' preeminent goals were to create resources to fund investments and meet earnings targets.

All of us have entered a new economic era. Businesses are changing, priorities are altered and, as a result, there are casualties. The reassessment of business need has led to many changes. So has what customers can do for themselves, such as use networked databases on their own to find information.

Like corporate libraries, academic libraries are facing the same circumstances and have to respond to the challenge to their traditional place on campus. Academic libraries are part of institutions that have a bottom line to meet and are, therefore, being required to rethink how they can contribute to their organization's sustainability (Healy, 2014).

Messages

Management is sending messages all the time. The goals of the organization continue to shift from year to year and frequently more often. Often the reporting structure of the library is shifted from one person or group to another. These actions are relatively continuous and, at times, contradictory. Yet librarians continue business as usual, rather than realizing the need to "swim with the sharks" and assist the organization in meeting its stated goals (Jacobson and Matarazzo, 2004).

Regularly evaluating services and sharing the results with higher-ups is essential for library sustainability. So is taking the pulse of the organization through networking. Since employers seem to be in a constant state of tumult, librarians must be able to navigate ever-changing expectations.

Alert! This is the time to demonstrate how the library can contribute to the stated (if transitory) goals of management. If you choose to marginalize yourself and the library, and refuse to figure out how to contribute, your days are certainly numbered. This may mean stopping some services or giving up space, or utilizing staff differently. In light of recent trends, library management must take the lead and make the tough decisions so as to align with organizational objectives.

In 2009 the authors began a series of articles in *Searcher Magazine* (now *Online Searcher*) aimed specifically at assisting special and corporate librarians achieve sustainability when the economy was leading to reductions in staffing, space, and even total closure of libraries. These articles covered an array of

topics to inform and advise practitioners in all types of special libraries. In 2013 these articles were revised and expanded and combined with new material from Great Britain, Australia, and New Zealand into a book, *Special Libraries: A Survival Guide* (Matarazzo and Pearlstein, 2013). Our goal was to create, in one place, a set of pragmatic yet sustainable options for libraries and librarians under stress and to prod information managers to become thought leaders in their organizations.

Academic library roles and services

As previously stated, academic librarians have purchased materials, organized collections, and arrayed a reference staff to field questions from customers. The need for physical collections and the traditional roles in the organization of information now have to be considered against a decline in customer use and the ubiquitousness of networked resources. While the need for a quiet study space on campus will always be there, other roles and services appear to be on the decline. In this light, the challenge is how to invest in and budget for innovation while not throwing out the baby with the bathwater and continuing some traditional services where needed.

For example, if traditional (i.e. in-person) reference services are really not needed as much why not move to remote reference services and have clerical or student staff at the reference desk? This has already occurred in some institutions where virtual "Ask a Librarian" services have become popular. At some libraries reference and circulation have been combined with a savings in the number of staff. In the area of collection development, replacing physical materials with eBooks may solve many problems that consume staff time (professional or para-professional) and valuable space.

Here is where the concept of alignment and driving contribution to the organization's bottom line – two tactics that company librarians should know well – can assist academic librarians. Here is where the ability to articulate the librarian's contribution to the organization's goals, graduating well-educated students who know how to use information to make good decisions, becomes critical (more about this later). Making the business case for a better interface that removes the need for the searcher to know which aggregator provides what or making the business case for more focused mandatory information literacy training that helps the customer understand when to use Google and when not to rely on it, addresses the reality of these changing times. Frankly, sometimes

Google is the best tool because the question is straightforward and easily answered by an obviously reliable source. In other circumstances, though, without knowledge of all the available sources and their vagaries, the “Googler” may well never find an answer within the time allotted or may find an answer that looks good but is totally bogus, or may find an incomplete answer and make a bad decision in the absence of the full information. The academic librarian, like the company librarian, has to make similarly tough choices regarding investments in resources to support these ends.

Another example: A librarian worked with the support of his corporate manager to end purchases of print materials – substituting an eBook service with 35,000 titles in the subject areas his organization needs. He will now only buy a print item if it is not available as an eBook. While there was some resistance to this policy from customers at first, it has now subsided. Now, the small library staff can concentrate on helping customers with more sophisticated research needs. Also, the space occupied by the library will not expand and will likely get smaller as time goes by. The organization of physical materials is no longer an issue and their circulation and availability is likewise not a problem. As with any new idea, the support of the corporate manager was critical. So too, at an academic institution, faculty involvement will be needed. And, as students bear a greater portion of college costs, their input will be needed as well.

The requirement to get all stakeholders involved in decision making, especially where what might be considered drastic changes are involved, is very typical of the corporate environment and academic librarians who have not faced these kinds of situations can draw from the corporate library experience. Trade-offs come with all decisions. In light of growing developments in the area of distance learning, the need for digitized collections is obvious to both faculty and administration and especially to those students off campus.

In any event, academic libraries are going to have to demonstrate value, notwithstanding the general goodwill towards them. How does the academic library contribute to faculty and student recruitment and retention, for example, and to what extent does the library contribute to student success? While these questions might seem ridiculously simple with easy answers on the face of things, there is no doubt that in these times of extraordinary competition for budget dollars they must be answered quantifiably and in a way that speaks the language of the academic administration.

Lessons for academic libraries – Strategic alignment and training

Academic libraries have a good deal of tradition on their side. They are often at the center of the campus and many are a source of pride and prestige, not to mention a critical component of the accreditation process. However, online resources have disrupted their traditional role as the first step in information seeking. While students needing a quiet place to study will make good use of the space provided, other forces are pressing on these libraries. These include reduced need for physical collections, fewer in-person reference questions, and less need to organize information in the traditional way. Networked resources have changed everything!

The authors would argue, though, that the advent of networked resources, viewed negatively by some as a “disruptive technology,” has actually created a path to sustainability for the academic library. As with corporate libraries, where the business case can be made for information literacy using financial metrics in the form of Return on Investment (ROI) that directly address the organization’s bottom line, academic libraries can use information literacy (i.e. training) as a way to demonstrate what Menchaca (2014: 353-367) references as the “impact value” of their services on students. While financial return is important to demonstrate, he notes, the “corporatization” of colleges and universities sees students as customers thereby pushing libraries to measure themselves using metrics that relate more directly to learning outcomes.

In highlighting the findings of Megan Oakleaf’s *The Value of Academic Libraries: A Comprehensive Research Review and Report* (2010), Menchaca points to her assessment of candidates just out of college in whom employers often find deficiencies in “critical thinking and analytical thinking skills” as well as the “ability to analyze and solve complex problems,” and the ability to “locate, organize, and evaluate information from multiple sources” (Menchaca, 2014: 359). If we agree with the idea that these areas have traditionally been the purview of libraries, can we envision a scenario in which training and research experiences provided by the library address these expressed needs in a way that is demonstrable and aligned with the institution’s goals of graduating students who exhibit the “higher order thinking skills of interpreting, synthesizing, and creatively manipulating abstract concepts to generate new constructs, meanings, interpretations, and knowledge”?

The need to reemphasize the focus on higher order thinking skills as well as the need to remind campus administration of the librarian’s role as educator,

coupled with the greater reach of technology, has created an ideal opportunity for academic libraries to make an aggressive case for information literacy training as a demonstrable example of the library's role in student success. Whether it is called library orientation, bibliographic instruction, information literacy, transliteracy, or metaliteracy, training students not only to be efficient and effective users of information tools and reasoned consumers of information is key to making the business case for academic libraries. Just as with corporate libraries, where the business case for information literacy links the library's activities to the organization's return on its information investments, the academic library's ability to directly link student information literacy training to learning outcomes and further to employability beyond graduation, is critical to sustainability (Bell et al., 2014 and Matarazzo and Pearlstein, 2014b).

If academic libraries are marginalizing their value by focusing on what Head and Eisenberg (2010: 360) have termed "lower order thinking skills of procedural, memorized routines, techniques, and rules for conducting research and finding information," then perhaps this is a good time to reconsider where resources can be better spent and greater, more relevant impact achieved (Menchaca, 2014: 360).

Libraries tend to occupy a lot of space and have a large number of staff. Yet more space for special projects and/or for faculty offices seems always to be in short supply. A wave of academic library consolidations is underway at present across department and unit libraries. The excuse is low usage; the goal is to secure that space for other departmental/school use under the guise that the main library will have the materials and it is only a short distance away.

As Laura Saunders (2014), assistant professor at Simmons School of Library and Information Science (Boston), notes, a gap exists between what business students have learned about information literacy during their academic careers and what they are called upon to do in the working world, where they are confronted with the ever-increasing amount and complexity of information. Saunders believes there is a role for librarians to fill this gap. Voicing a differing (but related) point, Susanna Cowan (2014) argues that rather than "teaching information literacy," librarians need to allow for more "discovery" on the part of students at some level. Instead, librarians, she writes, should be focused on "critical literacy" which she defines as "teaching students to actively analyze texts and other materials." Whether or not the battle for space or some other overriding challenge faces your library, it is undeniable that the responsibility of the

academic library (just as with the corporate library) is to provide the information literacy training that students (soon to be employees) need.

Professional and clerical staff in large numbers currently work in many college and university libraries, especially given the increased need for seven-day a week openings and the many evening hours of service. Salaries and benefits at academic units continue to rise in an environment marked by financial pressure at the state, regional, and national levels. These could lead to unprecedented cuts to those units that do not aggressively demonstrate their relevancy (i.e. contribution) to teaching and research. Making the situation more perilous is what Steven Bell (2014) calls the "enrollment blues." Bell notes a cascading downward trend starting with declining admissions resulting in shortfalls in tuition revenue, resulting in "dozens of layoffs and early retirement incentives."

Should academic librarians thank their lucky stars, as Bell suggests, that enrollment offices rather than the library are taking the reduction hit today because of this decline? Well, perhaps that is not quite what he is saying. Rather, Bell cautions that academic libraries must adapt to this new situation before it is too late. Of course, many academic libraries have already felt the sting of budget cuts notwithstanding demands for more services and many have already begun moving to adapt to this new economic reality. Nonetheless Bell's point is well taken. He sees a definitive role for academic libraries in supporting the institutional effort to recruit the best students and contribute to their staying and graduating. And if this means drastic changes in what, how, and when services are delivered; so be it. If the library is to be sustained as "the heart of the campus" rather than being perceived as "some black hole that sucks money from the budget into a bottomless pit of book stacks," it must aggressively demonstrate its relevancy to institutional enrollment and graduation goals (Bell, 2014).

Professional staff may resist any planned changes in services or collections. Many began their careers in more traditional roles. Many will have strong biases to typical reference services or organizational operations and will balk at the challenge to change. Instead, individuals will point to the many things that need to be done, particularly in their area of specialization and keen interest. These include data curation, digital humanities, digital preservation, information literacy, and a whole host of other worthy projects, each of which requires additional resources both human and monetary. But, can or should all of these interests be accommodated? Which contribute most to the priorities of the parent institution and which can

be aligned with the learning outcomes that employers say they value?

Academic library leaders need to view all of these ideas in light of the priorities of the local campus. There will not be only one model of service possible given the needs of the host institution (a reality with which corporate libraries are all too familiar). Higher education in general is also under pressure because of high tuition and little evidence to demonstrate that the product of their institutions can find meaningful work at the end of four or more years of an ever more costly journey.

Many academic libraries are working hard at keeping themselves relevant in the digital age. In the past, the pace of change has been slow in the academy. Few, if any, question the need for the library as we have known it. However, many colleges and universities now face big challenges in terms of finances, enrollments, and/or relevance of graduate skills to the job market. As a result, colleges and universities are developing new strategies. There is no question that the academic library must develop goals to assist its parent institution to achieve its strategic direction.

Measurement

Many libraries have recognized the need to measure the success of their programs. Academic libraries have used various tools such as LIBQUAL+ and the balanced scorecard to evaluate their services.¹ These provide comparative metrics that purport to provide measures of efficiency of library activities. The real question should not be how good is the library vis-à-vis other academic libraries? Rather, the question that now requires an answer is “how much does the library do for its customer”? This and other hard to answer (and measure) questions need to be addressed and the answers communicated to those who decide funding. The academic situation is going to demand clear and concise measures of value or face a less than certain future, despite the tradition of the library as the heart of the institution.

Acknowledging where value lies is the easy part. Measuring that value in ways relevant to organizational goals is no small challenge, especially when ways to quantify and qualify that value seem elusive. Compounding the challenge is what Menchaca’s review characterized as a fundamental disconnect between what faculty state as the goals of undergraduate education and the institutional culture and system of incentives, compensation, and personal scholarship that seems to work at cross purposes to the stated goals. While the actual metrics may be elusive, though, a potential course of action is not. Just as in corporate libraries where the concept of embedding

librarians with those they support rather than keeping them isolated in a separate space has taken hold in many organizations, some academic libraries have demonstrated the value of partnering with specific courses and linking higher concept training directly to learning outcome measures. As Menchaca notes, this aligns the library with the business of the institution – educating students. To make the business case for information literacy in the academic context, students must be prepared for life and work in a way that can be measured against the investment in education (e.g. library staff, databases, physical and virtual collections, etc.).

As the authors noted above, all organizations are seeking to increase revenue, control costs, and explore innovative ways to cut costs. Is this the mantra at your institution? How are you planning to meet these objectives and still provide needed services? You could wait until you are told to cut costs or you can proactively formulate a plan and identify priority services to demonstrate that you are in touch with the major direction of your organization.

A recent issue of *LJ Express* contained an article by Rich Anderson (2014) which explored activities at the University of Utah. The author said that his manager did “this or that” with the budget and aligned the library with the strategic direction of the university. This idea, he said, was suggested to the manager by a librarian at Yale. Nearly two decades have passed since the idea of aligning library services with the strategic direction of the host institution was introduced (Prusak and Matarazzo, 1990). Corporate libraries have been slow to adopt this approach, and have as a result, had membership of their professional association plummet and countless places to work disappear. Will academic libraries be nimble enough to meet the new demands which come from their administration, the student body, and the professional staff? All have a claim to the attention of the decision makers. Someone has to lead the way through the forest of competing demands for the resources at hand.

Conclusion

Remember the 1990 and 1995 studies sponsored by the Special Libraries Association discussed above in which two-thirds of managers surveyed did not know the value of their library? Well, in 2006 the Special Libraries Association commissioned the *SLA Alignment Study* (2009). This exhaustive and expensive research, carried out by two reputable firms, found that the services provided by their librarians were not what their customers wanted and two-thirds of corporate managers responding still could not articulate the value of their library. In 2013, the Special Libraries

Association partnered with the *Financial Times* to produce *The Evolving Value of Information Management* (DeBono and Arnold, 2013). Yet again, the majority of corporate managers surveyed did not know the value of their library.

Academic libraries need to heed this caveat from the experience of corporate libraries and not allow the same situation to occur. The other lesson from corporate libraries, though, is the advantage of illustrating for upper management the connection between investments in information and effective information-seeking behavior and the organization's competitive edge. In this case the ability to compete for students and the ability of graduates to compete in the real world. The twin imperatives of strategic alignment and training (i.e. information literacy) must link the academic library to the goals and objectives of the college or university and ought to be the first priority of library managers if sustainability is to be achieved. Librarians are capable of doing a lot of things. It is really not a question of "what can you do"? Rather, the question is "what should you do"?

Note

1. LibQUAL+ is a suite of services that libraries use to solicit, track, understand, and act upon users' opinions of service quality. These services are offered to the library community by the Association of Research Libraries (ARL). The program's centerpiece is a rigorously tested Web-based survey bundled with training that helps libraries assess and improve library services, change organizational culture, and market the library. Available at: https://www.libqual.org/about/about_lq/general_info (accessed 13 January 2015).

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The expansion of the personal name authority record under Resource Description and Access: Current status and quality considerations

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Abstract

Persons are complex, and their representation in library authority records is becoming increasingly sophisticated through the addition of attributes under Resource Description and Access rules. This case study, using a longitudinal approach, examines attributes in authority records from the MERLIN cluster of academic libraries at both six months (i.e. September 2013) and one year (i.e. April 2014), after the official adoption of RDA to assess trends in attribute field usage. After one year of Resource Description and Access cataloging, this study investigates the metadata quality indicator of completeness. Overall, attributes supplied tend to be sparse; 87.58% of authority records had no attributes at all, but the number of records with content had increased over the previous six months. Almost 8% of authority records had at least one attribute after a year; and almost 5% had two or more attributes.

Keywords

Personal name authority records, metadata quality, completeness, Resource Description and Access, case studies

Introduction

Resource Description and Access (RDA)-based library cataloging records, including authority records, are designed to capture information about entities in the bibliographic universe as never before. Library catalogs have historically focused on providing information about materials in the collections to assist ultimately with retrieval. These materials, however, do not exist independently of the people they were created by and are about. The *Functional Requirements for Bibliographic Records* (FRBR) lists *find* as the first user task supported by the FRBR conceptual model, followed by *identify*, *select*, and *obtain* (IFLA, 2009). A truly robust *find* functionality would permit library catalog users to focus their searches not only on library materials and their attributes, but also on the attributes of and relationships between persons related to these materials. This in turn would allow for retrieval based on criteria hitherto unthinkable. Being able to pull a set of items written in Chinese by women dentists who are

also poets remains a dream given the current library systems, but one that could potentially be a reality in the very near future.

Persons are complex; it is a vast understatement to state that people are much more complex than the library metadata that describes them. Persons are represented in two ways in library systems: through the personal name character string used as an access point or *identifier* in the bibliographic record, and through the information housed in the authority record. RDA defines the identifier for the person as “a character string uniquely associated with a person, or with a surrogate for a person (e.g. an authority record). The identifier serves to differentiate that person from other persons” (RDA Toolkit, 2014) and to assist with the finding function of catalogs. Attributes of persons,

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along with the identifier and justification for the creation of the identifier, are recorded in RDA authority records, records that historically have not contributed to retrieval in a robust way (Yee, 2005). Attributes in authority records help identify persons and have the potential to help differentiate them as well. Personal name authority records based on RDA are now permitting more information, such as gender, occupation, associated place, language and others (RDA Toolkit, 2014), to be recorded as attributes and that data is designed to be usable into the future.

There is an interconnection between the character string for persons, their attributes, and the role of authorities in the library system of the future. As the nature of personal name identifiers evolves, data must be present in the form of attributes to assist with the user task of *identifying*. Although with RDA it is now possible to add additional information about individuals beyond that which was permitted using the *Anglo-American Cataloguing Rules*, second edition (AACR2), supplemental content is not necessarily being provided in RDA-based authority records. What attributes are actually being included in authority records? Additionally, how does that content affect quality and potentially retrieval? The potential opportunities afforded the end-user by the addition of personal data are great, especially if character strings in personal name identifiers can be simplified and differentiated.

Drawing on the interconnectedness of the way individuals are represented currently in library systems, the present study first identifies relevant literature. It then assesses identifiers in WorldCat based on the MARC Usage project. Next, it analyzes personal name authority record attributes in the context of a case study. The role of authorities in the library system of the future is discussed and future study, including studies of user behavior, is recommended.

FRAD and RDA: New models for access

Functional Requirements for Authority Data (FRAD) (IFLA, 2013) supports FRBR (IFLA, 2009) in identifying the kinds of personal name attributes that support organization and retrieval within the bibliographic universe. FRAD identifies 14 attributes for persons, 11 of which are in addition to the attributes already identified in FRBR. The three attributes of persons identified in FRBR are dates, title, and other information associated with the person. The additional attributes identified in FRAD are gender, place of birth, place of death, country, place of residence, affiliation, address, language, field of activity, profession, and biography/history. Some of these attributes

have a relationship to the person entity that they describe (IFLA, 2013). These attributes support the FRAD user tasks of *find*, *identify*, *contextualize*, and *justify*. Of these, end-users of library systems will be most interested in the first three: find, identify, and contextualize. In a full-text system, there is the potential for any attribute to assist with the finding function. Person attributes also assist with identification. Dates associated with a person and biography are considered to contextualize as well (IFLA, 2013).

Additionally, FRAD (IFLA, 2013) identifies a series of potential relationships between persons and the character strings that represent them as they pertain to library materials. In access points, the person is primarily known by the name chosen by librarians according to RDA instructions. The character string, like other metadata, is an effective knowledge organization tool, but is nonetheless an artificial product of library metadata creation.

RDA is one of the content standards currently in use in the United States. The Program for Cooperative Cataloging (PCC) announced its *PCC Day One for RDA Authority Records* would coincide with the Library of Congress's official adoption of RDA on 31 March 2013 (PCC, 2011). Additional MARC fields were added to authority records to support the new data that can be recorded. Table 1 shows MARC authority fields that encode attribute information; all but the 678 (Biographical or Historical Data) are new with RDA (MARC 21 encoding, 2012). The 678 is being revived with the intention of displaying it to patrons (MARC 21 Encoding, 2012; RDA Cataloger Training, 2013).

Because RDA governs bibliographic records as well as access points and authorities, personal name access points and the underlying authority records underwent mass changes at the time of RDA's adoption (see PCC, 2012; RDA Cataloger Training, 2013). These changes did not, however, provide for the mass copy of information from the access points to the attributes fields of authority records leaving attributes to be supplied manually by catalogers.

Authority record content contribution

Currently, the Library of Congress and PCC (<http://www.loc.gov/aba/pcc/>) members are creating RDA bibliographic and authority records. Name Authority Cooperative Program (NACO) (<http://www.loc.gov/aba/pcc/naco/index.html>) members have been trained to provide RDA authority records, and documentation for the new RDA fields is at their disposal on the NACO website. The NACO program has been successful in the past because, among other things, it

Table 1. Person-related fields in MARC for authority based on RDA ((R) = Repeatable (NR) = Nonrepeatable) (MARC 21, 2013).

MARC For Authority Field Code	Description
046	Special coded dates (R)
370	Associated place (R)
372	Field of activity (R)
373	Associated group (R)
374	Occupation (R)
375	Gender (R)
376	Family information (R)
377	Associated language (R)
378	Fuller form of personal name (NR)
678	Biographical or historical data (R)

requires “acceptance of agreed upon standards for record quality” (Bruce and Hillmann, 2005: 239). A number of NACO funnels including funnels with themes relating to the fine arts like Art NACO Funnel, NACO-AV, and NACO-Music, are very active. Although NACO is an open program, only libraries with adequate budgets, staff, and time are in a position to consider it for their best and brightest librarians; alternatively, individual librarians need to undertake NACO training on their own and join a funnel if they wish to participate. In both cases, once trained, catalogers must have the time available to create the new records or to update existing ones. If creating new authority records, these catalogers will be involved in cataloging workflows of materials that are not generally held by the Library of Congress; the materials they are cataloging are unique, otherwise there would be cataloging copy available. NACO-trained catalogers are, therefore, a somewhat exclusive group working largely in academic libraries with the support to enable them to participate in this prestigious national program.

Quality and metadata quality

Information quality and data quality

Quality is a notion that is currently being explored in studies of information and metadata. Traditionally, library and information science has focused on providing access to information; the quality of that information has not been a focus (Buckland, 2013). Increasingly, researchers have been acknowledging that the question of quality is relevant, not only due to the amount of information now available on the Internet, but also to the meaning and subsequently to the veracity of the content (Buckland, 2013; Mai, 2013).

Mai (2013) identifies a list of attributes of information quality that have been put forth in the library and information science literature. These attributes include but are not limited to accuracy, authenticity, authoritativeness, balance, completeness, comprehensiveness, correctness, currency, relevancy, reliability, objectiveness, trustworthiness, understandability, usefulness, and validity. A number of frameworks have been put forth to evaluate information quality. Stvilia et al. (2007) define information quality as “fitness for use” (p. 1722) and develop a framework for measuring information quality that includes intrinsic, relational, and reputational elements that can be applied in number of information environments. Additionally, researchers have expressed particular interest in the assessment of information quality in the web environment due to the ease of publishing there (for example, see Knight and Burn, 2005).

Data quality is related to information quality in library and information science. Many of the attributes of information quality listed by Mai (2013) are discussed as early as 1996 as components of data quality in Wang and Strong’s (1996) study. Although the indicators of data quality and information quality could potentially be applied to metadata quality, such an analysis is outside of the scope of the current project.

Indicators of quality metadata

Metadata is commonly defined as structured information about information (Zeng and Qin, 2009), and is subject to quality assessments. As with the question of information quality and data quality, the question of metadata quality has been a recent topic of interest in library and information science. Practice has traditionally guided approaches to metadata quality, with authority control being the primary method that quality is ensured in the authority file. “The fundamental functions of name authority control are disambiguation and collocation” (Niu, 2013), requiring authority work to be carried out. By sharing authority records such as the ones created by NACO members, the entire community benefits from the authority control process, including users.

Although the practice of authority control and the creation of authority records are codified, a definition of high quality metadata remains elusive, as with information quality or data quality. Bruce and Hillmann (2005) jokingly compare metadata quality to pornography – one knows it when one sees it. Research may, for example, study aspects of metadata quality without operationalizing the term *quality* (see Hutt and Riley, 2005; Jackson et al., 2008) perhaps

owing to the intuitive nature of the term's use in the metadata context. Park (2009) considers metadata quality from a functional perspective, citing the need for metadata in a given system to support that system. Miller (2011), in his practical guide for creating metadata, states that most assessments of metadata quality are qualitative rather than quantitative. These research projects, however, tend to focus on metadata in digital library environments and not in shared cataloging environments such as the one addressed in the present research study.

Much of the discussion about the quality of metadata, especially in digital libraries, focuses on the problem of sharing data (see Park, 2009; Shreeves et al., 2005, 2006). Interoperability is one attribute of data quality (Wang and Strong, 1996), yet it is a primary focus of discussions of metadata quality. Shreeves et al. (2006) define interoperable metadata as metadata that is both human understandable, in context, and machine-processable; additionally, it should have the quality of usefulness/usability. Shared metadata is ideally interoperable and of high quality (Shreeves et al., 2006).

Discussions of quality in metadata are nonetheless useful for investigations of library systems. Defining attributes or indicators of quality, especially ones that work in a variety of information settings, rather than developing a definition, is one way of getting to the heart of the question of metadata quality. Bruce and Hillmann (2005) identify completeness, accuracy, provenance, conformance to expectations, logical consistency and coherence, timeliness, and accessibility as metadata quality measures that can be assessed for compliance through the analysis of related quality criteria. Better (shared) documentation for information professionals involved in metadata creation is one way they identify to facilitate the creation of high-quality metadata. Zeng and Qin (2009) equate high quality metadata with high-quality retrieval. They consider *completeness* along with *consistency* and *correctness* to be three indicators of metadata quality that could be applied to a study of metadata in individual records. A fourth indicator of metadata quality, *duplication analysis*, applies to systems in which metadata records are used (Zeng and Qin, 2009).

Completeness, as assessed by Zeng and Qin, covers the "range of descriptive detail provided by individual records as well as the overall distribution of various levels of records in a metadata database or a repository" (2009: 254). Within individual records, therefore, are all of the fields filled out? Miller (2011) confirms that this is an aspect of metadata quality supporting interoperability and sharability that should be checked by the librarian. Having complete

data in a single record is of little use in terms of recall if other records in the collection have incomplete data. In a collection such as a library's or a consortium's holdings, are all of the fields in all of the records filled out completely? Completeness, therefore, is an indicator of quality that applies to individual records and to the fields in those records as well as to systems and the inclusion of data in a given field across records.

A related question, especially in shared data environments, is that of consistency and *consistent data recording*. Zeng and Qin (2009: 257) define this aspect of consistency as "how data is recorded for a particular element". If metadata is not entered consistently in all the records in a system, then retrieval is nonetheless hindered. Every institution contributing content must enter data in the same way for data elements to be consistent in shared collections. High quality, complete, and consistent authority records in a single institution, once those records are mingled with records of inferior quality, may actually be seen as negatively influencing, at least temporarily, the quality of the overall collection of records (see Shreeves et al., 2006).

The dictum "the future is longer than the past" has been seen as a base value in cataloging (Miller, 2007), and has guided cataloging agencies striking out with RDA, especially in the beginning. Ideally, all authority records, through the active interaction of PCC libraries, will be updated and completed consistently in time. At present, though, it is unclear exactly how many records have been updated and what the overall implications are for quality. Metadata ultimately supports retrieval and use, but if records do not contain quality metadata, the content that they describe will be hidden from end-users.

Personal name authority records

Authority records would have preferably always indicated one person (principle of unique headings). At times, though, the person's characteristics attributes are not sufficiently evident to the cataloger to enable a person's information to be recorded as a unique record. When two or more individuals are designated by the same character string, a single *undifferentiated* authority record was created. RDA defines undifferentiated name indicators as "A categorization indicating that the core elements recorded are insufficient to differentiate between two or more persons with the same name" (RDA Toolkit, 2014: sect. Undifferentiated Name Indicator). In 2013, a White Paper authored by Riemer and Schreur (2013) recommended that undifferentiated name authority records be broken up. Semantic web technologies, including

the Virtual International Authority File (VIAF), require unique and addressable authority records. Even if the character strings in the indicator are identical, the underlying authority records need to be unique for different persons.

MARC as encoding scheme

The context in which library data is found, namely, integrated library systems (ILSs), currently are adapted for use with the MARC encoding scheme. Given the library's interest in the semantic web and linked data environments, the Library of Congress is investigating ways to move forward with library encoding in a way that will allow relationships to be made evident. The BIBFRAME (<http://www.loc.gov/marc/transition/pdf/marcl-d-report-11-21-2012.pdf>) initiative (Kroeger, 2013) is currently being put forth as the primary way in which cataloging records will be encoded. Until the scheme is mature, however, authority records will need to continue to be created in MARC.

Personal name identifiers

Personal name identifiers in library records contain character strings representing the last name of the person, the first name, and other information used to differentiate the character string from others at present or in the future. Table 2 shows the most popular subfields appearing in access points that relate to persons. Elements shown to end-users include titles, dates, relator terms or codes, and qualifiers that spell out the fuller form of a name. Control numbers and linkages are potentially useful for systems but generally are not displayed.

Access points used in libraries can be criticized for the additional data they contain. How relevant is it for users to see birth and death dates as a means of differentiating authors? Booksellers like Amazon (<http://amazon.com>) do not include terms to differentiate authors in the access point for the name, for example.

Traditional authority control focuses on expressing identity by means of unique headings [. . .]. The unique name heading for a person was what ensured that bibliographic records which cited that person as a creator or contributor or subject could be gathered under one heading. (PCC, 2013: 13)

With extraneous data in the character strings for access points, mapping between library controlled vocabularies and other systems is more challenging. DBpedia (<http://dbpedia.org/About>), the linked data version of Wikipedia, does not use dates to

Table 2. Bibliographic records personal name access points (100 and 700) subfields ((R) = Repeatable (NR) = Nonrepeatable).

Subfield code	Description
‡a	Personal name (NR)*
‡c	Titles and other words associated with a name (R)**
‡d	Dates associated with a name (NR)**
‡e	Relator term (R)**
‡q	Fuller form of name (NR)**
‡0	Authority record control number (R)**
‡4	Relator code (R)**
‡6	Linkage (NR)**

mandatory*, required if applicable**, optional***.

differentiate persons. Systems like the Internet Archive's Open Library (<https://openlibrary.org/>) that pull from library resources as well as linked data datasets can have a difficult time with automatic record matching. This is not surprising since the library world initially experienced a set of challenges matching library authority records from different international systems in VIAF, the Virtual International Authority File (Bennett et al., 2006).

Personal name identifiers in WorldCat: Analysis

Persons who are creators (authors, actors, etc.) are represented by access points in MARC bibliographic records in fields 100 and 700. Access points in bibliographic records are comprised of one or more subfields. Trends in the complexity of the access points can be analyzed based on fields used in bibliographic records. The *MARC Usage in WorldCat* project (<http://oclc.org/research/activities/marcusage.html>) published by OCLC Research, makes data about WorldCat's holdings available. Through the usage data for the 100 and 700 fields, the use of subfields in WorldCat records for personal names of creators can be evaluated. Dates, fuller forms of names (i.e. qualifiers) and titles have continued to be added, but not at a faster rate from January 2013 to January 2014, the period of time under study. Qualifiers were added less frequently to controlled access points for personal names, as their percentage of use in access points fell over the course of the year. See Table 3 for data from OCLC Research, in a tabular form, for before and after the adoption of RDA. Authority records, as demonstrated in the previous section, are changing, but so are the forms of access points being created.

Table 3. Complexity of author identifiers (i.e. MARC bibliographic 100 and 700) in OCLC's WorldCat.

‡ Description ¹	January		Jan 2014 occurrences	Jan 2014 % ²	% change Jan 2013–Jan 2014
	2013 occurrences	Jan 2013 % ²			
a Personal name (NR)	291,478,411	100.00%	311,607,120	100.00%	0.00%
d Dates associated with a name (NR)	85,309,924	29.27%	91,269,104	29.29%	+0.02%
4 Relator code (R)	43,604,446	14.96%	48,798,542	15.66%	+0.70%
0 Authority record control number (R)	25,855,327	8.87%	29,363,041	9.42%	+0.55%
e Relator term (R)	19,551,901	6.71%	23,745,659	7.62%	+0.91%
6 Linkage (NR)	15,406,166	5.29%	18,011,782	5.78%	+0.49%
q Fuller form of name (NR)	10,308,492	3.54%	10,837,508	3.48%	-0.06%
c Titles and other words associated with a name (R)	8,785,193	3.01%	9,509,560	3.05%	+0.04%

Current study

The literature has not investigated the extent to which attributes data is being supplied in authority records for persons and how complete any additions are. Without complete metadata, future initiatives' ability to recall full sets of items based on attributes will be questionable.

The present study, based on a longitudinal case study of authority records in a United States university library cluster, explores and analyses completeness of attribute information supplied in personal name authority records. Additionally, it investigates future options given the current state.

Method

The current research study examines attributes in the set of authority records in an academic library consortium located in the state of Missouri, United States (see Appendix I). This case study, using a longitudinal approach, examines authority record attributes at both six months (i.e. September 2013) and one year (i.e. April 2014), after the official adoption of RDA to assess trends in attribute field usage.

On 30 September 2013, six months after the official adoption of RDA by the Library of Congress, attributes fields from personal name authority records ($n = 1,156,315$) were pulled as four delimited text files. The first three files (with 300,000, 300,000, and 299,999 records respectively) were able to be analyzed further using Microsoft Excel. The fourth file, containing 256,317 records, was eye-readable but was corrupted and not able to be manipulated in Excel. To ensure that the fourth file was not statically different from the first three, 21,058 records (8.2%) were drawn at random from the corrupted file and were manually examined to make sure data analyzed was representative of the other three file's data. Because there were not statistically significant differences,

an analysis of the usable data files was considered representative.

On 7 April 2014, after one year of RDA implementation, the same set of attributes fields from all personal name authority records for the MERLIN cluster ($n = 1,274,618$) were again pulled. The records were pulled as 13 text files and all were analyzed using Excel. Results below are indicated on a by-field or by-record basis as appropriate, meaning that if repeated fields were provided in a single record or if content was repeated within a given field, it was counted once for the record or the field. Additionally, this study adopted a *take what you see* policy of analysis: if content was entered incorrectly or in the wrong field, it was nonetheless counted as entered. For example if 30 of the 1,274,618 records incorrectly entered content in the 375 Gender field, the content was nonetheless counted as an entry in the 375 field.

Because of the nature of a case study, the results reported here are not intended to be generalizable. They may, however, be indicative of similar academic library consortia or systems' personal name authority records since there will likely be considerable overlap in the holdings. Additionally, because not all attributes in the personal name authority records were completed (and not all completed attributes were correctly supplied), the method adopted here does not allow for calculations of the representativeness of these attributes vis-à-vis the population of individuals represented in this authority file. Instead, attributes in these records are supplied in an organic manner by catalogers and are subsequently studied here. In other words, the current study does not intend to draw conclusions about individuals represented in consortial authority files, but rather to provide an analysis of selected personal record authority attributes in the MERLIN cluster and to discuss implications for future work based on these results.

Table 4. Field use in MERLIN authority records for persons.

MARC field code	Description of element	6 months: % of sample (<i>n</i> = 899,999)	1 year: % of total (<i>n</i> = 1,274,618)	Change
046	Special coded dates (R)	7.10%	9.62%	+2.52%
678	Biographical or historical data	2.84%	2.31%	-0.53%
375	Gender (R)	1.86%	3.39%	+1.51%
374	Occupation (R)	1.78%	3.12%	+1.34%
370	Associated place (R)	1.49%	2.74%	+1.25%
377	Associated language (R)	1.33%	2.44%	+1.11%
378	Fuller form of personal name (R)	1.07%	1.45%	+0.38%
372	Field of activity (R)	0.90%	1.69%	+0.79%
373	Associated group (R)	0.89%	1.70%	+0.81%

Results

Completeness of attributes at the consortium level

Dates recorded in the 046 of MERLIN authority records are the most common attributes included in the authority records with 7.1% of records including them after six months of RDA cataloging and nearly 10% of authority records including them after one year of RDA. Data appeared in the 678 next most frequently after the 046; the 678 is a field that had been used in the past and that is being used again. Although the overall trend this data shows is a slight reduction in the amount of 678 content in the MERLIN cluster, this trend could be because of inconsistencies in the dataset examined in September 2013. Further analysis is needed in assessing this field in particular because of its previous use in cataloging. All of the new RDA 3xx fields saw an increase in their use over the period of study. See Table 4 for the results in tabular form.

Completeness of attributes at the record level

Attributes are given in authority records in the corresponding MARC field. To gauge the completeness of the records, any time data was included in a field, the field was counted; repeated fields were not taken into consideration. At six months, the vast majority (90%) of records has no attributes, with only 7% having additional attribute content in one MARC field, and only 3% having more than two attributes. At one year, more attributes were in the authority records overall. The percentage of records without attributes had dropped by 2.43%; only 88% (*n* = 1,116,259) of records had no attributes. Almost 8% of authority records had at least one attribute after a year; and almost 5% had two or more attributes. See Table 5 for a more complete breakdown of the number of attributes in records.

Table 5. Number of fields in authority records (per attribute).

No. of attributes by MARC field	6 months: % of total	1 year: % of total	Change in percentages
0	90.01%	87.58%	-2.43%
1	7.05%	7.63%	+0.58%
2	0.89%	1.15%	+0.26%
3	0.28%	0.53%	+0.25%
4	0.49%	0.82%	+0.33%
5	0.50%	0.88%	+0.38%
6	0.45%	0.80%	+0.35%
7	0.26%	0.49%	+0.23%
8	0.08%	0.13%	+0.05%
9	0.01%	0.01%	+0%

Given the commonness of the 046 (9.62%, *n* = 122,676) in authority records in the study, and given the fact that 9.31% (*n* = 118,696) of records studied contain between one and three attributes, it is reasonable to assume that when a record contains an attribute, that attribute overwhelmingly is the 046 field. This is not surprising, as copying content from the \ddot{d} of the identifier to the 046 of the authority record should be a straightforward procedure for catalogers if that data is already present, and it was, as noted, in nearly 30% of WorldCat access points.

Person demographics attributes

Although a full content analysis of the attributes in the MARC records was not the goal of this study, a limited number of descriptive statistics provide some basis for future considerations. Of the second and subsequently more complete set of records pulled in April 2014, 375 Gender and 377 Language attributes were assessed (see Tables 6 and 7). Males (80%, *n* = 34,515) were overwhelmingly represented

Table 6. Gender as recorded in MERLIN authority records.

375 Gender entries	Number of records with text ($n = 43,077$)	Of records with 375, % with this text
Male	34,515	80.12%
Female	8544	19.83%
Listing both male and female	(-12)	(-0.03%)
Presumed cataloging errors	30	0.07%
Total	43,077	100.00%

Table 7. Selected languages as recorded in MERLIN authority records.

377 Language entries	Number of records with text ($n=31,149$)	Of records with 377, % with this text
eng	22,666	72.77%
fre	2066	6.63%
ger	1961	6.30%
spa	1505	4.83%
rus	1032	3.31%
lat	610	1.96%
chi	420	1.35%
jpn	269	0.86%
hin	117	0.38%
swe	92	0.30%
ice	11	0.04%

in the supplied metadata. According to RDA 9.14.1.1., *Language* “of the person is a language a person uses when writing for publication, broadcasting, etc.” (RDA Toolkit, 2014). Authors who write in English (73%, $n = 22,666$), potentially among other languages, were also very well-represented. Table 7 shows a sampling of languages indicated in 377 fields. Because the field is repeatable, more than one language may be supplied in a single authority record.

There are limitations involved in this kind of analysis of attributes in records, not the least of which is the fact that there is no way of knowing how representative this sample is of persons in the authority file of this academic library consortium’s cluster. Are academic collections in the United States so heavily skewed in favor of males and writers who use English, both potentially in terms of authors and subjects? If so, is there a discussion of the consequences in order? Questions of representativeness aside, the metadata supplied is for a group of individuals strikingly unrepresentative of international demographics in scholarship over time.

As part of the investigation into the demographics of persons, limited information about Occupations (MARC 374) was also assessed. Occupations are generally text strings based on Library of Congress Subject Headings and are subject to all of the inconsistencies of free-text fields such as being mis-entered and containing typographical errors. Eight somewhat diverse occupations were manually sampled from among the 374 Occupation fields ($n = 39,772$) in search of a discernable pattern. Around 15% ($n = 6517$) of 374 Occupation entries included the term *Author* or *Authors*. The activity of NACO members cataloging non-textual materials was evident in the creation of 374 fields relating to the performing arts such as *Actor**, *Pianist**, and *Musician**. See Table 8 for more information.

To develop a better sense of the kinds of content entered, additional analysis of the Occupations field was carried out through the use of the online text analysis tool Voyant (<http://voyant.com>). Although the data set was too big for analysis in the aggregate, some more detailed issues were brought forth through the course of the exercise. First, “lcsH” tended to be entered once in a record or in a field, even if there were multiple terms taken from the subject heading list. Second, not all entries used “lcsH” – some did not indicate a controlled vocabulary; others indicated using “itoamc”, a controlled vocabulary for occupations maintained by the Library of Congress’s Manuscript Division (<http://www.loc.gov/standards/sourcelist/occupation.html>). The use of variant terms to describe a single occupation cannot reasonably be considered to promote high-quality, interoperable metadata especially if the metadata is meant to be shareable and machine-understandable.

A very limited number of Associated Places (MARC 373) were also investigated, but in a more cursory manner due to the varied nature of the contents of the field. Associated Places contains free-text entries for institutions that are or are based on corporate body access points. Of 373 fields containing data ($n = 21,620$), over half contained the term University ($n = 11,040$) and over 10% contained the term College ($n = 2517$) implying that the information supplied in the 373 is primarily entered for educated people; if the 374 is indicative, then these people are not all professors, but may have been students. Other associated places relating to religion or politics, for example, may not be included. See Table 9 for a tabular representation of this data.

Discussion

The potential opportunities afforded the end-user by the addition of personal data are great. Yet, to provide

Table 8. Selected occupations as recorded in MERLIN authority records.

374 Occupation entries	Number of records with text (<i>n</i> = 39,772)	Of authority records with 374 field(s), % with this text
Author*	6517	16.39%
Professor*	2885	7.25%
Actor*	1962	4.93%
Poet*	1826	4.59%
Historian*	1724	4.33%
Lawyer*	1320	3.32%
Pianist*	1130	2.84%
Musician*	1109	2.79%

Table 9. Selected associated place terms as recorded in MERLIN authority records.

373 Associated Places entries	Number of records with text (<i>n</i> = 21,620)	Of records with 373, % with this text
University	11,040	51.06%
College	2517	11.64%

systems that meet the needs of users, more than just English-language authors, males, and the educated, will need to be the object of attention. If we consider completeness an indicator of metadata quality, then the data being maintained on persons is not of high quality, neither in the completeness of data in individual records studied nor in the completeness of data in given fields across this collection.

Interoperability in terms of record sharing is not hindered by incomplete records such as the authority records studied in this project. The records studied are interoperable even if they are incomplete or if their content is inconsistently entered. Quality extends beyond interoperability of records in different systems, however, in a situation like a consortium where records are downloaded from a centralized source and created locally for local authors and personalities, the potential for consistent retrieval based on the entries as they stand is not promising.

Metrics for quality not taken into consideration in this study include dimensions like accuracy. Organizations such as NACO help confirm that content will be accurate and will describe the correct person. There is no guarantee, however, that the correct authority record's controlled access point will be used in the correct bibliographic record. Within the authority records, instances of inaccurate information were also discovered, including content being mis-coded to be in the wrong MARC field. Additionally, NACO

provides best practices documentation and instruction, but at present, is leaving the completion of such fields up to the individual cataloger. It would arguably be unreasonable to expect catalogers creating authority records to spend hours carrying out the authority work necessary to include information on all of these attributes for every person, but it is not unreasonable for additional best practices guidelines to surface in accordance with the concerns voiced in 2005 by Bruce and Hillmann.

By far, the biggest concern was the lack of metadata on persons. Constraints that might be keeping personal data from entering shared authority records include issues relating to individual library operations and collections. Catalogers with the NACO authorizations to create RDA authority records for persons are not able to keep up with the manual data creation scenario this requires. Based on the results presented above, we can infer that catalogers are encoding additional information for males with some relationships to higher education, potentially to their own universities where they work. Catalogers also may be supplying additional content for persons who are part of their fine arts workflows. This shot-gun approach to providing metadata is supplying library systems with only a sliver of information on a very small fraction of persons in the bibliographic universe. In library systems of the future, authority records will not only differentiate individuals, but will also allow for grouping by shared attributes if and only if the attributes are supplied. The richness and complexity of information about persons has the potential to assist with relationships and linkages in future systems such as the proposed BIBFRAME-friendly library, and that information must be complete if it is to be used to its potential.

The inclusion of attributes in authority records will alleviate the need for additional text beyond the name of the person to appear in the personal name identifier, adhering to the suggestions of the PCC Task Group on the Creation and Function of Name Authorities in a Non-MARC Environment (PCC, 2013). The complex identifiers noted in WorldCat can be streamlined through the systematic addition of attributes to the authority record. Of the nearly 30% (29.29%, *n* = 91,269,104) of personal name identifiers in WorldCat with dates, all of these dates can be moved or copied to the attributes area of the authority record. Although the study reported here does not examine the authority records stored in WorldCat, the recommendation could be carried out first as a pilot in a smaller corpus. The same approach to supplying attributes holds true for fuller forms of names generally listed as qualifiers (in 3.51% of identifiers, *n* = 10,837,508) and titles and

other words associated with a name (in 3.06% of identifiers, $n = 9,509,560$).

One limitation of the present study is the fact that undifferentiated name access points are not permitted to contain person-specific elements since, by definition, distinguishing attributes of the persons represented by the identifier are not known. It was not possible to ascertain the number of undifferentiated name headings based on the data that was pulled for this study. At some future point, it will become necessary to differentiate these headings, splitting apart the undifferentiated records to create as many authority records as necessary. These identifiers, therefore, will not necessarily have person-related data recorded right away in all of the new underlying authority records. Future study may reveal when and how attribute data for persons is supplied in authority records, especially if the name is undifferentiated. If the author is neither prolific nor famous, it is difficult to imagine that much more content will be added to the authority record, effectively excluding her work from future person-attribute based searches unless strategic action is taken.

Future work

If the catalog is to provide equitable access based on attributes, it needs to include attributes for all, equally. More persons than English-speakers, males, and the educated, will need to be the object of attention. In the future, the ideal library system will have access to complete sets of authority metadata that will assist uniformly with all of the user tasks identified in FRAD (IFLA, 2013): find, identify, contextualize, and justify. For this to happen, libraries must find a way to leverage data freely available on the semantic web. Inputting content on an ad-hoc basis by a select group of highly trained librarians cannot and will not suffice. As the PCC remarks:

It is integrating external data with one's own more than simply exposing one's own data that, when engaged in by all parties, will enable more fluid navigation and leveraging of the richness of the linked data environment for enhanced discovery. (PCC, 2013: 10)

Authority data is unique and precious, but given the current aspirations, librarians need to resolve to relinquish full and complete control over the contents of authority record attributes and resolve to work through content from curated resources such as Wikipedia via DBpedia.

The vision presented here is not inconsistent with the BIBFRAME vision, where, as explained by the PCC:

Authorities are not designed to compete or replace existing authority efforts but rather provide a common, light weight abstraction layer over various different Web based authority efforts to make them even more effective. (PCC, 2013: 13)

The ISNI project has similar aspirations (MacEwan et al., 2014). A similar example is evident in the author pages of Wikipedia. Author Chris Anderson's entry (http://en.wikipedia.org/wiki/Chris_Anderson_%28writer%29) includes a section of authority records in library systems for the differentiated author. Human-readable (and machine-readable) links appear to his authority records in WorldCat, VIAF, LC[NAF], ISNI: 0000 GND, SUDOC, BNF, and NDL.

It is distinctly possible that not all persons associated with content in library collections have a presence on the semantic web; these persons will require additional attention by catalogers, but this work should be undertaken strategically. The amount of work done by catalogers will ideally be inversely proportional to the amount of data already in existence on the semantic web.

Additionally, attributes content provided in authority records should be supplied in a way that is machine readable. Free-text entries represent a challenge for systematic search and retrieval due to their inconsistent nature. Semantic-web enabled identifiers and the possibilities they represent should be investigated as a possible solution to the problems and vagaries of free-text entries that are merely text strings, not *data*.

Finally, it is essential to keep users in mind at all stages of development. Assessing how users are carrying out the FRBR user tasks and how they are and will search in future systems needs to be a focus of future work. The introduction of technology for technology's sake is not a solution. Future work must be based on a solid understanding of how users actually approach the system, not only in theory, but in practice.

Conclusion

This study revealed that after one year of RDA cataloging, attributes for persons in personal name authority records of a consortium are not consistently supplied. Metadata related to persons that is included is minimal, but is increasing. Low-hanging fruit such as dates are the most commonly added attribute to authority records, but even these are not added consistently, especially as compared to the number of dates that already appear in the \ddagger d of the access point. Other attributes supplied in authority records tend to be sparse, and preliminary content analysis suggests that the terms included focus on English-speakers and

males. Additionally, university affiliations are not uncommonly added. At present, there is no way to know how accurate and potentially how representative these elements are. There is also no way to gauge effectively how representative the authority records with content are of the records in the whole of the authority file.

Although the current study investigates the metadata quality indicator of completeness for attributes in post-RDA authority records, in the process of investigating aspects of the demographics of persons in the authority file, a few informal observations came forth. First, consistency in the way data is supplied is lacking. The primary example is the addition of information in the Occupations field. Additionally, librarians may not necessarily be creating records representing the breadth of persons having the potential to be searched unless women and those who do not write in English are underrepresented in this particular consortium. It also logically seems that librarians from well-funded, large academic institutions are creating the bulk of the shared records, potentially skewing the kinds of persons described in collections that download these shared records. These observations should be investigated more thoroughly in subsequent research.

RDA is paving the way for a richer and more performant future of library systems in regards to the way that persons are included in search along with resources. Based on the present study, additional changes that are required for the attributes about authors to be included in metadata records will not be inconsequential. Because RDA is moving in the right direction, librarians will need to think creatively about how best to carry out these new tasks while balancing precision with volume. The promise of the semantic web must be investigated as systems and practices are reconsidered, as continued effort needs to be placed into the study of how best to provide quality metadata for persons in library systems.

Appendix I

MERLIN cluster (Consortium) member libraries

- Missouri University of Science and Technology
- University of Missouri (MU)
- MU Law
- University of Missouri – Kansas City
- UMKC Law
- University of Missouri – St. Louis
- University of Missouri Archives and WHMC

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Notes

- 1 Description taken from <http://www.loc.gov/marc/bibliographic/bd100.html>
- 2 For each, it was assumed that 100% of personal name identifiers contained the required, non-repeatable sub-field a.

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Author biography

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Sharing science: The state of institutional repositories in Ghana

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Abstract

Scientists around the world benefit from sharing scientific data, lab notes, and preliminary papers, as well as traditional, formal scientific papers. Institutional repositories (IR) are open spaces for scientists to deposit their work. Doing so could potentially spark new collaborations, allowing scientists and scholars to build cross-institutional capacity. However, scientists must trust that the repository is secure, and they must understand copyright law and protections. Many African nations are at a crossroads: poised to solve major problems with well-trained scientists, yet stymied by expensive and unpredictable ICT. Many African scientists are also wary of the Internet due to rampant scams and fraud. This paper describes current African ICT development, reports on findings from a study about ICT, databases, and IRs in Ghana, and concludes with recommendations for expanding the use of IRs.

Keywords

institutional repositories, collaboration, research, developing nations, Ghana

Introduction

Librarians tend to see information as a public good. By definition, a public good increases in value when it is shared and used. However, some scholars and scientists might not want to share their information. They are recognized, evaluated and compensated based on their production and contributions to their field, so they have a vested interest in ensuring that they retain ownership of their scholarly products. Informational researchers have found that putting papers into Institutional Repositories (IRs) has helped scholars disseminate their work, which in turn should raise their (and their institution's) profile. This is very promising, but the act of depositing works into an IR requires the scholar's trust—trust in the system's purpose and that it is stable and secure. They need assurance that their work will not be stolen, and they need to understand how to protect it with copyright. Certain aspects of developing countries present especially vexing challenges for implementing an IR. For instance, institutions often lack a strong and secure Information Communication and Technology (ICT) network. Scientists might lack

knowledge about copyright laws to protect their work. There may be insufficient resources for managing the IR, there are often inconsistent power supplies, and above all, there is a lack of funding for major IT projects.

This paper relates findings from a survey of Ghanaian scientists and librarians at four governmental scientific institutions. It reports on scientists' current sharing habits and their feelings about sharing papers and data online. It seeks to uncover obstacles to sharing in order to advance cross-disciplinary work and institutional capacity. The brief literature review provides background on sharing data and scientific papers, specifically as it pertains to perceptions of IRs in developing nations. It concludes with recommendations about IT infrastructure and management of IRs, as well as education for scholars in developing

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nations about IRs and copyright in order to explain how IRs might advance internal and external research recognition and help build a foundation for research collaboration.

Significance of the study

This study aims to provide an initial assessment of scientists and librarians that will help create a blueprint for successful institutional repository development in Ghana. In order to make progress towards this goal, it is important to gauge participants' feelings about some of the most important or pressing issues, such as copyright and ownership. It also points out some of the obstacles that Ghanaian scientific institutions face regarding IR implementation. Ghana's IT problems are similar to those in many developing nations; therefore, while this research looks specifically at Ghanaian institutions, we believe that the findings are widely relevant.

Literature review

This research looks at Institutional Repositories (IRs) as a solution to communication roadblocks within institutions and between nations. The literature review concentrates on scholarly communication, management of IRs, and the concept of open scholarly communication, highlighting the needs and challenges of scientists working in developing nations.

Defining institutional repositories

The explosion of electronically produced scholarly work (and the resulting required storage and organization for access) has required librarians to extend their creative problem-solving skills. Electronic resources continue to grow in importance to researchers (Russell, 2009); contributing to the body of electronic scholarly knowledge is very important for globally recognized scholarship. The IR is one way to gain exposure and collaborate with other scholars.

What, exactly, is an IR? As with other emerging technologies, IRs may not have a single accepted definition, but their purpose is to help scholars store and share their work. Heery and Anderson (2005) define a repository as a collection of digital objects defined by the characteristics of the materials and the community that uses it, but not differentiating between repositories and other systems such as databases or catalogues. They state that different repositories may hold particular kinds of materials—for instance, e-prints and dissertations or discipline-specific materials. Crow (2002) sees the importance of IR digital collections in capturing and preserving the intellectual output of

university communities. Russell (2009) says the aim of IRs is to aid the management and dissemination of the increasingly copious amount of scholarly electronic resources produced by academics.

Terms such as 'digital library,' 'virtual library,' 'institutional repository,' or 'electronic library' have been used interchangeably by various scholars. MacColl, Jones and Andrew (2006) create a mathematical bridge between these terminologies and resolve that IRs are simply a subset of libraries: libraries are repositories, modern libraries focus on digital materials, and IRs are a type of digital library. Kassim and Kochtanek (2003), in studying IR implementation, found that 'IR' is being used interchangeably with 'virtual library,' 'electronic library,' or 'library without walls.' Talja (2002) says that IRs encourage collaborative learning *within* academic institutions. Masinde and Rajan (2010) discuss IRs as a means of preservation and expansion of access. Likewise, Harnad et al. (2004) say that IRs increase the visibility of materials among research and academic communities. Dunning (2006) says, though, that merely having documents in a repository will not assure their visibility. Clearly, though, online data (including scholarly and research output) is growing daily, and organization of the material is vital. IRs offer one viable method for organizing institutional output, and the organization offered by an IR can help users make sense of scholarly data by providing institutional context. There are differences in terminology, but most scholars of IRs do agree that they increase the visibility of scholarship, thereby promoting sharing and use by academic communities inside and outside of an institution.

The open nature of IRs

The Registry of Open Access Repositories (ROAR) (2014) proclaims, "Open access to research maximizes research access and thereby making research more productive and effective." Perhaps one of the most important (and as we found, problematic) aspects of IRs is their openness. This means that scholars freely deposit items into their own institution's repository, including items that a scholar might submit to a journal. This requires the author to either maintain copyright or negotiate with the journal to maintain the right to deposit a version of their paper into the IR. Other items that they submit to the IR (such as notes, lab results, etc.) might be valuable to other researchers. Most of these items can be found through search engines on the open web. Borgman (2012) calls this a "conundrum" because it is urgent that researchers share data, it is being demanded by

publishers and finders, but there is little discussion of the “competing interests and differing incentives of the any stakeholders involved” (p. 1061).

There are two types of Open Access communication, as defined by the Budapest Open Access Initiative (BOAI): green OA (repositories) and gold OA (journals). This group asserts that scholars and their institutions have a duty to work with OA publishing in order to “to make knowledge available to everyone who can make use of it, apply it, or build on it.” The term OA was coined by BOAI as:

‘free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited’ (Budapest Open Access Initiative 2013).

Furthermore, the BOAI says that funders should cover reasonable publication costs, and institutions should require deposit into the repository for immediate dissemination. The BOAI model ensures quality scholarly output while providing the fastest dissemination of material and protecting the author.

Managing communication, ICT, and IRs

Meadows (1998) traces the history of research and communication from Aristotle through modern electronic publishing, explaining that communication technologies are at the heart of research. Modern research is innately embedded in new technologies through its entire lifetime—from inception through storage. Therefore, it can only thrive in a robustly supported Information Communication Technologies (ICT) environment. A strong infrastructure, in turn, enables more scholarly output (not to mention different *kinds* of output, including papers, books, multimedia, etc.). Technologies are always under development that might shape the possibilities for production, storing and sharing (and thus the IR).

The fluid environment of production and retrieval, of course, requires robust management at all stages, including the IR. Warwick et al. (2006) say that users of electronic resources do not necessarily differentiate between types of sources as they would with print sources. Electronic resources usually link to other sources, or several types of material might be

combined in one document. Peer review may or may not be present or apparent. This also means that managers of digital resources should understand what their users’ needs are when building and maintaining the IR. Since IRs are based within the community, librarians or other IR managers must understand the needs of the users.

Developing countries and the information age

ICT is an enabler—it holds the power to bridge economic and development divides, but people must recognize what it can offer them, and embrace the aspects that will provide the means to grow. Roy (2005) explains that ICT has the potential to enable closer interaction and universal bonds between and within national borders and between individuals, groups and institutions. Theories on ICT cannot be separated from the realities of local, national, regional and international political economy that shape its adoption. There is still a large ‘digital divide’ between and within developed and developing nations that needs to be resolved and that is located in the context of inequalities between nations.

Block (2013) says that developing countries must overcome any obstacles if they want be a part of the information age. The information flow in developing nations is different from that in developed nations. Additionally, there is little scholarship on the information seeking behavior of scholars and scientists in developing countries. Inadequate ICT is a hindrance to scholars’ communication in developing countries, and it also renders them less globally competitive.

Yadamsuren (2013) found that the research infrastructure in Mongolia (a developing country) fails to meet the needs of researchers for sharing and collaborating; therefore, researchers are often dependent on western scholarly communication products. Salager-Meyer (2008) says that open access policies in countries with well-funded research (such as the United States and members of the European Research Council) may help scientists in developing nations publish their research, and also increase collaboration between developed and developing (which she calls central and peripheral) nations, in terms of scientific output.

Despite the obvious public (indeed global) good that open access policies fulfill, there are still roadblocks; for instance, the tenure process in academia does not favor OA journal publication (Park and Qin, 2007). Van Noorden (2013) explains that commercial journals “tend to be more selective.” They often cost more to produce, as well—“the more effort a publisher

invests in each paper, and the more articles a journal rejects after peer review, the more costly is each accepted article to publish” (Van Noorden, 2013). Many commercial vendors do offer discounted or free access to their journals in developing nations through programs such as Research4Life (<http://www.research4life.org/>) and INASP (<http://www.inasp.info/en/>), but there is still much that is unavailable, even in print. Willinsky (2006) explains: “In Africa, there is no less of a struggle underway to support the development of research capacities amid scarce access to the scholarly literature” (p. 99)—for instance, one librarian at the Development Policy Centre in Ibadan, Nigeria, was unable to get “more than 60 percent of the issues published each year of the print journals to which the library subscribes” (pp. 99–100). Free online access certainly helps, but slow network problems continue to pose barriers to access. Yet another problem is that many African scholarly journals face continuous economic struggles and are not indexed (p. 103).

ICT networks will have to be developed for scholars in developing countries to gain recognition and collaborate with people in developed nations. Globalization implies that human problems extend beyond national borders; therefore, strong ICT infrastructures in developing nations should be an international priority (Chan and Costa, 2005).

The role of ICT in Africa’s scholarly development is not in doubt as leaders in developing nations have always expressed a strong awareness of ICT for communicating research. At the 10th meeting of the Africa Partnership Forum in Tokyo (2008), delegates agreed on the following resolutions about ICT that demonstrate African leadership’s acceptance and interest in using ICT for economic and scientific growth:

- ICT is a powerful tool to boost economic growth and reduce poverty.
- African nations will respect the World Summit on the Information Society (WSIS) resolutions regarding the key role of ICT for inclusive, globally competitive and knowledge based societies.
- Infrastructural bottlenecks will be removed in order to address the New Partnership for Africa’s Development (NEPAD) broadband initiative.
- Africa will prioritize ICT access and effective use at all levels.
- African governments must create an ICT specific regulatory framework within an overall policy that promotes economic and political governance.

Librarians across Africa are also aware of ICT and its role in library and information management. However, there are many problems with cost and connectivity of Internet services that will continue to stymie their efforts to move forward. Cottrell (2013) described the stark reality of bandwidth inequality: “The total bandwidth available to shuttle data between African countries and the rest of the world in 2011 was less than 1 terabit per second. That’s about one-seventieth of Europe’s international bandwidth capacity. Making matters worse, the price for bandwidth in Africa is cripplingly high. While a university in Germany might pay about US \$4000 per month for 1 gigabit per second of bandwidth, a school in Kenya can expect to pay \$200,000 for the same service” (p. 56).

Information policy is also underdeveloped. Copyright is especially problematic for developing nations. Olaka and Adkins (2012) found that librarians in Kenya are only moderately knowledgeable of copyright issues. In Ghana, the Copyright Act of 2005 (Act 690 section 21) permits use of protected copyright works by libraries or archives. In an unpublished pilot IR research project undertaken by the first-named author of this article, scientists were reluctant to deposit their work in the IR because of questions about copyright. Others discussed plagiarism and the outright theft of their materials. Even though the copyright law is clear, it is evident that the scientists either do not have in-depth knowledge or do not trust it. Chisenga (2006), though, states that despite fears of breaking copyright laws, there are a number of legal ways authors could self-archive, thereby contributing an IR; educating authors about how to do this is key.

ICT in Ghana

Both a ‘big picture’ of ICT and Internet penetration in Ghana as well as a focused presentation of ICT among scientists are required to understand the promise and problems with research institutions’ IRs. How many of Ghana’s 25 million people (United Nations Data, 2014) are using the Internet? What are they using it for? A historical approach will frame the current situation.

The Internet came to Ghana in 1995, though it is still not widely used. Quarshie (2012) said that there was very slow growth of Internet use between 1999 and 2005 (0.1 percent), but use rose incrementally until 2009. Between 2009 and 2011, there was more drastic (3 percent) annual growth. Currently 8.4 percent of Ghana’s population uses the Internet regularly, but there is every indication that it is poised to grow in

importance. At the time of this writing, they found that education accounted for 23.75 percent of Ghana's Internet use, and only 6.35 percent of the traffic was for commercial purposes.

Martey (2004) discusses ICT's usefulness for distance education, but also the potential improvements ICTs could make across other spheres of life. In a study about rural development and ICT use, Alemna and Sam (2006) agree: agriculture, education, small industries, and other related areas would benefit from ICT developments. Hinson (2005) described how the Internet is used in Ghana, finding that it is used across many spheres—for instance, research, consulting, administration, teaching and policy making. Akkermans (2010) describes practical ICT use and development in Ghana, such as mobile applications for banking, emphasizing that applications for rural development, such as those that allow farms to receive market information and negotiate prices, are of special interest. Before that will work, though, applications must be developed that use local languages and dialects—as FM radio, which is currently and successfully used, has proven.

What does ICT mean for global scholarly participation? Atiso (2002) described the impact that ICT has on both national development and academic work. Early Internet users in Ghana were mostly students who used it for email, chatrooms, and for personal affairs. He concludes that a strong ICT infrastructure must be available in order to make the Internet a useful tool for scholarly pursuits. Ynalvez et al. (2005) asked if the Internet would indeed be a panacea for global scholarly participation, and found that “The digital divide that has direct bearing on scientific output is the divide that pertains to practice and experience, not access and use.” Adika (2003) found that faculty members at the University of Ghana did not use the Internet often, and recommended that librarians and information professionals help faculty understand changes in scholarly communication.

Asunka (2013) describes the lagging ICT networks and poor state of digitization in developing nations, which affect scholars' visibility and ability to compete globally and be a part of the Information Age. He recommends upgrades to the infrastructure and leadership from librarians and ICT experts. Adeyoyin (2005) thinks that in view of technological changes, libraries' services must undergo a fundamental shift (which many developed nations have already embraced). ICT is both the cause and the solution for librarians' involvement and central position in scholarly activity.

Rogers' (2010) Diffusion of Innovation Model can help us understand Internet use for scholarly sharing

via ICT, which generally starts with early adopters and eventually the practice becomes more commonplace. As Ynalvez et al. (2005) found, people who have obtained a graduate degree in Europe or the United States were more likely to use ICT regularly; eventually, its use spreads throughout the institutional culture as people recognize its applicability to their own work. There is no overnight fix, but training and education can help reduce resistance to change. There are still significant barriers in taking full advantage of the Internet's practical and scholarly uses for citizens and scholars of Ghana, as well as other developing nations.

Statement of the problem

Institutional repositories should ultimately provide a manageable digital system that is useful for providing access to scholars at the point of their need. The problem is that users must both trust the IR and then proceed to use it (Ynalvez et al., 2005). IRs are a new innovation in developing nations, but they have the potential to help scholars in those nations become more active participants in the global knowledge economy. This study addresses scholars' and librarians' attitudes about IRs and barriers to their use in research libraries in Ghana. In Ghana, there is no national or institutional policy requiring scientists to deposit their works in the IR. There is, however, a legal requirement that binds all scientists to give a paper copy to the national library. At this time little research has been conducted on research libraries in Ghana. This paper therefore will help to explain how Ghanaian research libraries can continue to grow and meet patrons' needs as the Internet and a culture of sharing data changes the face of scholarly communication worldwide.

Objectives

The aim of this research is to define barriers to use of IRs in research institutions in Ghana. The study looks specifically at:

1. the role of IRs in research institutes in Ghana
2. scientists' knowledge about IRs, and how IRs might fit into scholarly communication in Ghana
3. legal and cultural issues and beliefs associated with open access and IRs.

Research questions

1. Are scientific researchers aware of IRs?

2. Do scientific researchers want to use IRs-do they trust them? Do they have the knowledge to use them?
3. What are the barriers for effective IR implementation in research institutions?

Methodology

This research was conducted via online (Qualtrics) survey. One survey was developed for researchers and one for librarians (see Appendices 2 and 3). The surveys were sent directly to the listservs of all four institutions. Participants responded online. The second-named author is a former employee of one of the Institutes, and thus had insight into some of the problems and issues with IRs in Ghanaian scientific institutes. Thus, some of the questions were formulated based on experience, and others were more general in nature.

Scope and limitations

This study is about the use of IRs in scientific research institutes in Ghana. Four research institutes, the Animal Research Institute, Water Research Institute, Ghana Atomic Energy Commission and the Food Research Institute, were selected because they are the main research organizations in the country (see Appendix 1). The Water Research Institute, the Food Research Institute, the Animal Research Institute are under the umbrella of the Council for Scientific and Industrial Research (CSIR), and the Ghana Atomic Energy Commission is the other main research organization. There are two factors in Ghana that we anticipated as barriers to data collection in this study: unpredictable ICT connectivity and researchers' general reluctance to participate in survey research. Despite these known barriers, we opted to use an online survey because of its low expense and expediency. We acknowledge the low rate of participation; therefore, we will not claim that the findings are statistically significant, but we do believe that they provide insight into the problem and gauge scientists' attitudes on IRs at this point in time. There was a higher participation rate in some institutes because of the personal connection the author had to its librarians, who reminded scientists to fill out the surveys.

Findings

Two surveys were created because there were a few questions that were different as between the researchers and the librarians, due to the nature of their work

regarding the IR. Twenty-six scientists and 12 librarians completed the study, though they were not required to answer every question. The following tables illustrate all of the data that was collected in the surveys. Respondents were not required to respond to all questions; when possible, the responses are combined into a single table, with *R* indicating *researcher* and *L* indicating *librarian*.

Demographic data included work affiliation (see Appendix 1), educational background, and age.

Affiliated institute. Almost half ($n = 17$) of the respondents were from one institution, the Animal Research Institute, where the second named author in this study formerly worked (Table 1).

Table 1. Institution.

	Researchers	Librarians
CSIR – Animal Research Institute	14	3
CSIR – Water Research Institute	0	3
CSIR – Food Research Institute	11	1
Ghana Atomic Energy Commission	1	5
Total	26	12

Educational background of respondents. Most ($n = 25$) of the respondents held a master's degree or equivalent as their highest level of educational qualification (Table 2).

Table 2. Education.

	Researchers	Librarians
PhD	3	1
Master's Degree or equivalent	18	7
Bachelor's degree or equivalent	3	5
High School diploma or other	3	0
Total	27	13

Age. The majority ($n = 21$) of the respondents were aged between 31 and 40 (Table 3).

Table 3. Age.

	Researchers	Librarians
21–30	3	4
31–40	19	2
41–50	2	3
51–60	3	4
60+	0	0
Total	27	13

Self-reported comfort level with Information and Communication Technologies (ICT). Most (n = 21) of the respondents consider themselves to be early adopters of technology (Table 4).

Table 4. Self-reported comfort level with ICT.

	Researchers	Librarians
I am an early adopter – I use new technologies, read blogs, and enjoy innovation.	12	9
I tend to wait and see if new technologies work well before I will use them.	6	1
I avoid new technologies. I prefer tried-and-true methods to communicate or deal with information.	2	1
<i>Total</i>	20	11

Internet connection. Respondents' answers varied widely, but the majority of the librarians (n = 7) have a cable connection, while the majority of researchers (n = 14) have a modem. Some have more than one type of connection (Table 5).

Table 5. Internet connection (type).

	Researchers	Librarians
Dial-up	1	0
DSL	5	1
Cable	8	7
Modem	14	2
Other (all filled in "wireless")	3	1
<i>Total</i>	31	10

Speed of Internet service. Most of the respondents (n = 23) said that they have a "fast" or "somewhat fast" Internet connection. Four said that it was somewhat slow, and one did not know.

Use of Internet and Communication Technologies. Multiple answers were allowed. The most common reason for researchers to use ICT is to share their research, followed closely by research activities (Table 6.1). The most common use of ICT by librarians is for cataloging and classification, also followed closely by research activities (Table 6.2).

Funding ICT projects. Most respondents (n = 22) reported that their institute funds its ICT projects; however, they felt that the central government should be more active in funding ICT projects in order

Table 6.1. Researchers' uses of ICT.

The library system/finding local resources in my library	11
Databases	11
Sharing my research	13
Other (answers included research and emailing)	3
<i>Total</i>	38

Table 6.2. Librarians' uses of ICT.

Integrated library system	4
Cataloging and classification	7
Serials control	0
Database management	4
Acquisitions	1
Research work	6
Other	2

to strengthen their communication capabilities (Table 7).

Table 7. Who funds ICT projects?

	Researchers	Librarians
The institute	13	9
The government	4	3
Internally generated funds	6	1
Foreign funding	0	0
Other (write-ins: researchers and projects)	3	0
<i>Total</i>	26	11

Main problems with ICT. Most (n = 24) respondents said that funding was the main problem that they faced with ICT, though low bandwidth was almost as problematic (reported by 18) (Table 8).

Table 8. Problems with ICT.

	Researchers	Librarians
Funding	14	10
Training	4	0
Low bandwidth	12	6
Acceptance	0	0
Other (write-ins: high speed connectivity)	2	0
<i>Total</i>	32	16

Solving ICT problems. Qualitative data was sought; Table 9 represents a summary of the answers, followed by illustrative answers from respondents.

Table 9. How can ICT problems be solved?

	Researchers	Librarians
Funding (generally)	4	5
Local funding	1	0
Foreign funding or donors	3	2
Central/government funding	3	1
Levy on users	1	0

Some of the illustrative statements made by respondents are:

“Though there are limited funds in the institute, more funds need to be allocated to solve ICT problems. Also, proposals could be sent to foreign donors for assistance in the form of free subscription and access to relevant materials, to have some form of concessions where it may not be possible to acquire services for free and many others.”

“ICT could be funded by the government with some input from a foreign donor e.g. project funds. However, in Ghana in general, I have the opinion that the cost of the Internet is too high and the bandwidth is low. Furthermore, reliability is low. It will help a lot of the government can put in place policy to regulate ICT providers in Ghana, especially ISPs and communication companies. In regards to regulation, I mean the quality of service, the price of service and the reach of communication services.”

“Getting broadband from better Internet service providers probably at a higher cost which researchers cannot afford.”

“The solution to my institute’s ICT problem can be solved through increased and sustainable measure. The ICT problem is also an issue lack priority. Administrators of my Institute must see ICT as the driving force in advancing its developmental agenda. [The] head of the institute must therefore set it as a priority.”

Changing Internet Service Providers and work disruptions.

The survey asked respondents if their institute had changed ISPs, and if so, if it had disrupted their work. The question was open-ended. Most respondents who answered this question (n = 11) said that they had not experienced problems due to ISP changes, but eight said that they had changed ISPs more than three times. Six respondents said that it did affect their work; the illustrative quotes below expound on the nature of this problem.

Table 10. Number of times institute has changed Internet Service Providers.

	Researchers	librarians
No/do not know	4	7
1 – 2 times	2	3
3 or more times	8	0

Table 11. Work disruptions caused by changing Internet Service Providers.

	Researchers	librarians
Yes	6	2
No	2	0

Some of the illustrative statements made by respondents are:

“The service provider was maintained but the service was switched from DSL to cable (fiber optics). There was a slight interruption in the switch, which did not affect work that much. However, the quality of the service was supposed to improve, but it as rather worsened—[there are] lots of interruptions and slow Internet speed.”

“Yes, we have changed Internet Service Providers twice and it did disturb my work for about a month.”

Use of databases and relevancy to work. Most of the respondents were from the Animal Research Institute. Therefore, the data is illustrative of the nature of the respondents and is not generalizable to Ghanaian scientific institutes. The most relevant foreign database for respondents is AGORA, and the most relevant local database was AGRIS; both are agricultural databases.

Paying for databases. Most (n = 15) respondents said that the Institute pays for access to databases. Five researchers said that the government pays for access, five said that internal organizations pay for them, and four said that international organizations pay for access.

Communication and social networks. Most (n = 29) of the respondents use email for work. A smaller number use Facebook (n = 12) and LinkedIn (12).

Table 12. Communication and social networks for work purposes.

	Researchers	Librarians
Email	18	11
Twitter	0	1
Facebook	8	4
LinkedIn	11	1
Other (s): (write-ins: Blogs, Pinterest, YouTube)	3	0
Total responders:	18	17

Use and relevancy of ICT and library services. Both researchers and librarians said that ICT and library services were most important for gaining access to resources, though “promoting data sharing”, “promoting new types of resources” and “preserving digital resources” were also said to be highly relevant by the majority of respondents. Respondents were less enthusiastic about the the library’s role in new forms of peer review and information management.

Beliefs about the purposes of IRs. Most respondents agree that repositories should contain a wide variety of electronic resources, including peer reviewed articles, books, and other articles, images, datasets, and software. Librarians strongly agreed (n = 11 out of 12), and researchers agreed (n = 10 out of 18), that someone should be in charge of quality control and navigability of the IR.

Problems with IRs. Most respondents (combined, librarians and researchers) believe that funding (n = 20 out of 28) and copyright (n = 14 out of 28) are very problematic issues in the IR. Less problematic is scholars’ trust in the IR, theft, and preservation, though those issues were still cited as being “somewhat likely” to be a problem by both researchers and librarians.

Management of the IR. The majority of the respondents (n = 24 out of 34) said a librarian should be in charge of the IR. Nine said that a committee should be manage the IR.

Training to use the IR. Researchers were asked what types of training would be helpful in learning to use the IR. Responses included: seminars and workshops, training in using databases, training to effectively manage and access e-resources online as well as to share information, training in information management and web applications, training in scientific writing and presentation skills.

Librarians were asked if they currently provide education for researchers on the IR. Four out of nine said that they are not interested or able to provide training; three said that they provide regular training sessions, and two said that they have annual or irregular training sessions.

Sharing information about IRs. Librarians were asked if they discuss or work with other librarians who are interested in institutional repositories. Most said that they do, through formal collaborations and at conferences.

Table 13. Librarians’ information sharing about IRs.

Yes, informally.	2
Yes, and conferences or through formal collaborations.	7
No.	1
Total	11

User education. Librarians were asked, “What kind of education do you think you or the other scientists and researchers at your institution need to be able to most effectively share their data, findings, and papers?” They mentioned a variety of areas for instruction, including information literacy instruction, communication strategies and advanced modern technologies, copyright, citations, and metadata. Funding was also mentioned.

Monitoring the IR. Google Analytics (n = 8 of 21) garnered the most votes as a tool to monitor the IR.

Table 14. How should the IR be monitored?

Server transactions	6
Google analytics	8
User surveys	6
Download history	2
Other “They can be easily assessed”	1

Additional Commentary. Respondents were asked if they had anything to add. The majority of respondents who chose to answer this question concurred that staff and researchers need to have additional training to use ICT effectively for collaboration; however, Internet services and funding are a prerequisite, and good management of resources was also mentioned. One researcher said, “for effective use of ICT, there should be an Internet service with high band width which should make accessing information fast and effective. This is not so in the Institute and hence all efforts to improve ICT usage will be ineffective.” A librarian added, “The IR and ICT are the key for now and the future development in research and information delivery.”

Recommendations

ICT enables scholars and scientists to share their work at an unprecedented rate. There are different methods involving ICT that scholars might use to share their work. Institutions that provide scholars with a repository are giving them a valuable tool for sharing their data to increase production and prestige while protecting their work. However, the users must be comfortable with the system, and the system must

work well. A slow connection is frustrating to use, and the librarians in this study might have had a different perspective on Internet connectivity. Generally, the library has a stronger wireless connection than scientists throughout the building. Scientists might rely on a different connection (such as a modem) to connect, which could influence how they approach their work, including using the IR. This problem should be addressed in order to meet the scientists' needs.

Respondents in this study demonstrated a strong awareness of the IR and its role in scholarly communication and sharing. The scientists understood the importance of sharing their work. They did express genuine but not insurmountable concerns in fully utilizing the IR. The librarians, likewise, are aware of the advantages offered by IRs. The librarians' concerns are similar to those of the scientists; major concerns are funding of the IR and ICT in general, copyright, and management issues.

Users of the IR must understand copyright. Copyright is confusing even to librarians, but education will help the researchers understand new rules and models so that they are confident about what they can put in the IR for sharing and cooperation. Previously, the second named author of this paper found that researchers rarely wanted to share their data or technical papers out of fear of theft. Surprisingly, this study found that most scientists thought the librarians should be responsible for managing the repository, which indicates that the scientists trust the librarians' ability to manage their documents. A steering committee, composed of scientists and scholars, though, is needed to help evaluate the IR's effectiveness and to encourage peers to use the IR. The steering committee can bridge the gap between librarians and scholars.

A bigger problem (and one that was universally recognized in this study) involves connectivity and bandwidth. As many other researchers have pointed out, developing nations must address problems with ICT in order for the scientists to be a part of global scientific networks. The scientists who participated in this study are all working for governmental agencies that deal with critical problems in the nation: food, agriculture, energy, and water. ICT is no longer a luxury; it is a necessity for successful scientific partnerships that solve real-world problems. There is no level 'playing field' at this point - a true digital divide exists which can only be addressed through sustained investment in a robust ICT infrastructure by the government. Only after governments realize the importance of stable and sustained ICT projects will solutions to the other problems follow - solutions that will allow scientists in developing nations

to share their work, create collaborative relationships, and create solutions for the most pressing issues in those countries.

Another challenge that most developing countries face is a poor or inconsistent energy supply. IR management demands a consistent and uninterrupted power supply. IR managers will therefore have to find alternative ways to supplement the existing supply to have a smoothly running IR in the research libraries in Ghana.

Even though the responses show a willingness to share, the second-named author of this study had previously seen an unwillingness to deposit materials into the IR. The investigator worked in one of the Institutes from 2004-2013 and found much resistance to using the IR. There are a number of reasons for this reluctance. First, there is a general distrust of ICT due to problems with cyber-fraud in the region. Organizations, businesses, and individuals were afraid of losing data, their bank accounts, and their identity due to a low level of security in online environments. Therefore, they tended to be very reticent in sharing their data.

The librarian's role in the research library has changed substantially. They can no longer be content with ensuring access to the scholarly work from other countries - they should be leaders in their institutions for copyright and data management, as well as taking an active role in ICT development. This is a Sisyphean task in developing nations where the ICT infrastructure lacks stability. However, without leadership and a stable ICT network, scientists in developing nations will lack the tools to become global scholars. As we stated earlier, globalization means that the problems in the developing world are everyone's problems. Scientists from Ghana and other developing nations produce valuable work, but isolation reduces its worth and impact. This paper advocates that IRs are an important tool in breaking down barriers, and that every effort should be made to identify and remove barriers to their use.

Appendix I: Background of Research Libraries

Animal Research Institute

The Animal Research Institute (ARI) is one of 13 institutes under the Council for Scientific and Industrial Research (CSIR) Ghana. The aim of the ARI is to conduct animal science research, develop technologies related to the animal industry, and to advise the government and other stakeholders in the industry. Okantah (1990) states that 70 percent of protein consumption of Ghana's population is from animal

sources; hence its strategic role within the government. The institute has a library whose mandate is to store, manage and disseminate information related to the animal industry in the country.

Water Research Institute

The Water Research Institute's mandate is to research water and related areas and to support socio-economic development, agriculture, health, the environment, and industry. Gyau-Boakye and Dapaah-Siakwan (2004) say almost 69 percent of Ghana's population lives in the rural areas whose main source of water is raw surface water from streams and rivers. The Water Research Institute library collects, manages, and disseminates information for the researchers in the institute.

Food Research Institute

The Food Research Institute (FRI) was established in October 1963. Its is mandated to conduct market-oriented applied research, provide technical services and products to the food industry as well as assist in poverty alleviation through creation of opportunities for income generation, thus contributing to food security and foreign exchange earnings.

Ghana Atomic Energy Commission

The Ghana Atomic Energy Commission is a leading research organization into sustainable and effective utilization of nuclear science and technology. The library serves as a resource base for information in nuclear science and technology.

Appendix 2: Survey for Librarians about Institutional Repositories

Part 1. Demographic Information

1. What is the name of the Institution at which you work?
 - a. ARI
 - b. WRI
 - c. GAEC
 - d. Food Research Institute (FRI)
2. What is your educational background?
 - a. PhD
 - b. A/Sc/Phil
 - c. BA/Bsc
 - d. Diploma/Other
3. What is your age?
 - a. 21-30
 - b. 31-40
 - c. 41-50

- d. 51-60
- e. 60 +

Part 2. Use of ICT

1. Please indicate your level of comfort with Information and Communication Technologies (ICT).
 - a. I am an early adopter - I use new technologies, read blogs, and enjoy innovation.
 - b. I tend to wait and see if new technologies work well before I will use them.
 - c. I avoid new technologies. I prefer using tried-and-true methods to communicate or deal with information.
2. What kind of Internet connection do you have?
 - a. Dial-up
 - b. DSL
 - c. Cable
 - d. Modem
 - e. Other
3. How fast is your Internet service?
 - a. Very slow
 - b. Slow
 - c. Don't know
 - d. Fast
 - e. Very fast
4. What do you use the Internet and Communication Technologies (ICT) for?
 - a. Integrated library system
 - b. Cataloging and classification
 - c. Serial control
 - d. Database management
 - e. Acquisitions
 - f. Research
 - g. Other
5. Who funds ICT projects in your institute?
 - a. The institute
 - b. Government
 - c. Internally generated funds
 - d. Foreign funding
 - e. Other
6. What are the biggest problems that your institute faces regarding ICT?
 - a. Funding
 - b. Training
 - c. Low bandwidth
 - d. Acceptance
 - e. Other

7. Can you describe how you think your problems might be solved? For example: Funding? Through a sustainable measure? A foreign donor? A local donor? The local government?
8. Has your Institute changed Internet Service providers? If so, how many times have you had to change? Did this disturb your work flow, and for how long?
9. Which foreign databases do you use, and how relevant are they to your work?
Check here _____ if you do not use any foreign databases.

	Highly relevant	Relevant	Slightly relevant	Not relevant
AGORA				
HINARI				
AJOL				
OARE				
Others				

10. Who pays for the foreign databases?

- a. The Government
- b. International Organizations
- c. Internally generated funding
- d. The Institute
- e. Other

11. Which local databases do you use, and how relevant are they to your work?
Check here _____ if you do not use any local databases.

	Highly relevant	Relevant	Slightly relevant	Not relevant
AGRIS ¹				
ARILIB				
erails				
Carligh				
Other(s)				

12. Which communication methods or social networks do you use for your work?

- a. Email
- b. Twitter
- c. Facebook
- d. LinkedIn
- e. Other

13. ICT and Library Services are used by the scientists and researchers in the Institute that I work for the following reasons:

	Daily	Often	Occasionally	Never
To enhance access to resources.				
To promote new types of resources				
To encourage new forms of peer review				
To aid in institutional information management				
To promote data sharing				
For the preservation of digital resources				

14. Please indicate to what extent you agree with the statements below.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Repositories should contain peer reviewed articles.					
Repositories should contain books and journal articles.					
Repositories should contain a wide variety of electronic resources such as images, datasets, and software.					
If everything is allowed in the repository, it will be difficult to navigate and filled with junk.					
Someone should maintain strict control over what goes into the repository.					

15. How problematic do you perceive the following issues to be in relation to institutional repositories?

	Very Likely	Likely	Somewhat Likely	Undecided	Somewhat Unlikely	Unlikely	Very Unlikely
Copyright							
Theft							
Scholars' knowledge about, or trust of, the repository							
Preservation of digital resources							
Funding							

16. Who do you think should manage an institutional repository?

- A librarian
- Scholars
- A committee
- Users
- Other(s):

17. Do you provide education to scholars about Institutional Repositories?

- Yes, we provide quarterly or bi-annual training (please describe if you would like).
- We provide annual or irregular training (please describe if you would like).
- No, this is not something that we are interested in or are able to do.

18. Do you discuss or work with other librarians who are interested in institutional repositories?

- Yes, informally.
- Yes, at conferences or through formal collaborations.
- No.

19. What kind of education do you think you or the scientists and researchers at your institution need to be able to most effectively share their data, findings, and papers?

20. How would you like to see institutional repositories monitored? You can choose more than one answer. Please also describe why you chose your answer.

- Server transactions
- Google analytics
- User surveys
- Download history
- Other

21. Is there anything else that you would like to say about ICT or IR either in general or in your

institute? Please continue onto the back of this paper if you would like.

N.B. Questions 17, 18 and 19 as worded above were not included in the Survey for Scientists and Researchers (see below).

Appendix 3: Survey for Scientists and Researchers about Institutional Repositories

N.B. The questions in the Survey for Scientists and Researchers were in all essential respects the same as those in the Survey for Librarians, above, except where indicated below.

Part 1. Demographic Information

4. What is your profession?

- Scientist
- Other:

Part 2. Use of ICT

4. What do you use Internet and Communication Technologies (ICT) for?

- The library system (local resources in my library)
- Databases
- Sharing my research
- Other

17. What kind of education or training would help you to be able to most effectively share your data, findings, and papers?

18. Is there anything else that you would like to say about ICT or IR either in general or in your institute? Please continue onto the back of this paper if you would like.

Note

1 The Ghanaian database was called the Ghana AGRIS Pilot Project (GAPP), and is now called GAINS, which

was the result of an incrementally completed local version of the AGRIS database.

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The library in the research culture of the university: A case study of Victoria University Library

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Abstract

This article presents a case study of Victoria University Library as a relatively young university library contributing to the development of an institution's nascent research culture. It showcases various scholarly communication projects and initiatives with an emphasis on digital repositories, digital literacies and new roles for libraries. The concerns, challenges, and successes of the Library may help inform the planning and implementation of initiatives and projects in similar academic libraries.

Keywords

library research services, university libraries, digital repositories, digital literacy, librarians and researchers, Victoria University Library, Australia

Introduction

Within Victoria University and its external research environment, the demands on and expectations on researchers and those who facilitate research, namely, librarians, are becoming complex and sophisticated. As an entity tightly connected to its university community, Victoria University (VU) Library has proved itself to be agile and flexible in responding to this environment. This article showcases the various scholarly communication projects and initiatives of VU Library. VU Library endeavors to contribute to the development of a contemporary research culture with a four-pronged approach, including strategic planning direction; one-off funding of initiatives; partnership with research services, and a realignment of staff endeavors to support the direction.

Victoria University was one of the 'new universities' formed out of Colleges of Advanced Education

as part of higher education reforms in Australia in the early 1990s. Like other Australian universities, VU aspires to be a research university. However, as a 'new university' it has lacked a significant research history and culture. Moreover, when compared to other Australian university libraries, VU Library has the lowest materials budget per capita. It is ranked 46th out of 46 on the list of the Council of Australian Universities (2012). Such comparisons are made difficult because of the university's high number of vocational education students who are included in the ranking process. If only comparing serials expenditure

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per postgraduate student, VU Library is ranked 39th. It also has one of the lowest numbers of library staff per student – it is ranked 43rd out of 46. In recent times, it has had irregular funding for staffing and information resources. This has seen a reduction of almost 30 percent in staff numbers (from 101 EFT in 2010, to 70 in 2014) and a piecemeal implementation of strategic initiatives such as data management services. However, the challenge for VU Library is to develop a coherent and inclusive suite of research supports that crosses organizational boundaries, and bring them together in an integrated research data service to support the research and data lifecycles.

Background

VU achieved university status in 1991. As a university, it is in the unusual position of offering both higher education and vocational education programs, and is one of only four dual sector universities in Australia to offer both programs. By Australian standards it has a small number of research students, with 814 Higher Degree by Research students in 2013. However, it has a large total cohort of students (55,000 students in 2013) – 33 percent are students at bachelor degree and 54 percent at pre-bachelor degree levels. It also has 661 academic staff, who comprised 32 percent of the total staff of 2,119 in 2013. Not all of these academic staff are active researchers, although there is no publicly available data to indicate the exact figure of research active staff (Victoria University, 2014). As with other Australian universities, it has a large cohort of international students (29 percent) both overseas and onshore, mostly from Asian countries. VU also has educationally, culturally, linguistically and economically diverse students spread across nine onshore campuses and eight offshore partner sites. According to the university's 2013 annual report, some 25 percent of the student cohort is from low socio-economic backgrounds and about 35 percent are mature-aged students (Victoria University, 2013).

As a younger university, VU is ranked at the lower end of the list of Australian research universities in terms of research income and research quality. However in the updated strategic plan *Excellent, Engaged and Accessible: The University of Opportunity* (Victoria University, 2013a), the Vice Chancellor and President, Professor Peter Dawkins, announced an ambitious target for VU to be in the top 20 Australian universities for research by 2020, with an emphasis on applied and translational research. The strategic plan also outlines the university's goal to become deeply engaged with industry and community, including in

its approach to research. The university has also identified areas in which it wants to specialize and become internationally renowned. As a first step it has been decided to position the university as Australia's Sport University because of its existing breadth and depth of teaching, research and engagement in sport.

To achieve its ambitious strategic goals, the university went through a complete organizational change process in 2012 and 2013 to rebuild the university and establish a reputation as a university-of-choice. The university's focus on achieving its strategic goals, including its research strategies, has been sharpened by increasing competition in the Australian higher education and vocational education market in the last few years. This is mostly due to changes in policies of both the federal government and Victoria state government, from regulated funding for students, to competition for students in the open market place.

New roles for libraries

While the focus of this paper is a case study of the concerns, challenges, and successes of the role of the library in the scholarly communication process, the paper also acknowledges the growing literature in the area of new and emerging areas of practice for librarians. For VU Library, the literature confirms its ongoing re-alignment of research services as it continues to provide value to its community. Since 2009, VU Library has extended its role to, and is a key partner in: (i) promoting the university's research publications; (ii) collaborating in the analysis and reporting of the university's research outputs to Government; (iii) promoting the university's research repository; (iv) providing expert support to researchers in seeking, accessing and organizing information resources; and (v) developing a suite of services to support research data management.

In their manifesto of support for the research process, Bourg, Coleman and Erway (2009) outlined a set of practices to enable libraries to address matters in the evolving research landscape – in essence an evidenced-based, value-driven, client-focussed and flexible partnership approach. The manifesto points to the need for agile anticipation and response to changing research practices in infrastructure, training and engagement. This requires genuine collaboration: an understanding of the people involved, the value of the work and, at times, a willingness to step out of the way. At VU Library a cycle of annual and strategic planning and regular VU Library client surveys has informed the agile implementation of its practices.

The provision of data services, including management and curation, is another new role for the library,

according to Tenopir, Birch and Allard (2012). They surveyed academic library members of the Association of College and Research Libraries (ACRL) to identify the state of research data service provision in the United States and Canada (2012: 3). Approximately 63 percent of the invited libraries responded. A minority (less than 20 percent) offered research data services other than reference-type services, although as many had future plans to offer such services (2012:17). Tenopir, Birch and Allard concluded that it would enhance and expand the library's role in the academy if more libraries were involved (2012: 42).

In the Australian context Borchert and Callan (2011) recognized the need to provide professional development to Queensland University of Technology (QUT) librarians in 2009 because of institutional changes to research support services and systems. They surveyed QUT researchers and librarians to understand current research practices and needs, and subsequently professional development programs on e-research concepts and technologies were provided to support librarians in the university's research agenda. Research data management, data interviews, changes in scholarly communication and collaboration tools were some of the topics around which training for librarians was designed. This is very similar to the in-house and external librarian development sessions provided to its staff by VU Library.

Mamtora (2013) from Charles Darwin University (CDU) provided an interesting comparison for VU library, CDU being an even smaller and recently established, dual sector Australian academic library. Mamtora pointed to the impact and impetus that the introduction of the Research Quality Framework in 2006, now replaced by Excellence for Research in Australia (ERA), had on the development of research services in Australian academic libraries.

VU Library's approach

VU Library has a demonstrated track record of engaging with all endeavors of the university and has shifted its services accordingly to ensure its relevance and fitness. It is a trusted and responsible entity within the university, with a reputation of innovation, strong relationships and good governance processes, as evidenced most recently at the end of 2013 by its top ranking in an internal staff satisfaction survey. Client feedback, obtained from regular VU Library client surveys, has been used as a guide to prioritize practice. VU Library contributes to the university's research goal mostly through collaborations with university research services, for example, in the implementation of projects such as Symplectic Elements, and the

development of policy for the Victoria University Research Repository, an open access repository which aims to showcase prominent VU research outputs. While technical support for systems and deposit processes are handled by the VU Library's five Digital Services staff, the training, advocacy and encouragement is provided by the Scholarly Information Services staff: that is, the Research Librarian in conjunction with the six College Librarians.

To develop the capabilities to support research repository, publication, training and data projects at Victoria University Library, the overall approach has been to build on the capabilities of existing staff rather than create new units within the library. The exceptions are two positions dedicated to support research processes or research training: the Digital Repositories Coordinator and the Research Librarian. The Digital Repositories Coordinator is part of the Digital Services unit within the library and focuses on the development of the research repository, data management projects and the relationship between library workflows and research publication systems. The Research Librarian is part of the Scholarly Information Services unit and is responsible for a range of research information services, including the design and delivery of research-skills development and training, collaborative technologies, supervision of students-as-staff (research ambassadors), and scholarly publishing and communication strategies. The activities of these staff are supported by other staff in the Digital Repositories and Scholarly Information Services units, who also contribute to training and repositories workflows and data management projects. Metadata services are provided by upskilling existing cataloguing and metadata staff to work in the Dublin Core environment required for the Research Repository. In terms of providing strategic direction for the library's contribution to university research services and processes, the University Librarian is supported by the Library Management Team in integrating key research objectives into the library's three year strategic plan (Victoria University, 2013b).

Analysis and reporting of the University's research outputs

Since the inception of the Excellence in Research for Australia (ERA) initiative in 2010, Research Services and VU Library have worked closely to collect and report on research publications to the Australian Government as part of the ERA "which aims to identify and promote excellence across the full spectrum of research activity in Australia's higher education institutions" (Australian Government, 2014). More

recently this activity has been extended to include the Higher Education Research Data Collection (HERDC) audit “which comprises of research income and research publications data submitted by universities each year” (Australian Government, 2014a).

The support for the research publication collection processes is one objective of the university Research Repository. The Repository was developed in a context of central government funding for the foundation of research repositories in every Australian university. Although VU Library had an open access Research (or Institutional) Repository since 2001, one-off federal funding from the Australian Scheme for Higher Education Repositories (ASHER) led to a rapid expansion of the repository with the objective of providing a comprehensive record of the university’s peer reviewed research recorded from 2008. The main aim behind the provision of central ASHER funding was to establish a nationwide repository infrastructure that would provide access to research outputs for the government-defined research collection processes (HERDC and ERA) which, in Australia, help to determine centrally allocated research funding.

In addition to the consistent strategic objectives implemented through annual operational plans, there has also been an explicit strategy to support data management since 2010. In *Partnering for the Future: Library Strategic Plan 2010–2012* (Victoria University 2010: 5), data management first appeared as “Partner with researchers in e-research programs and data management initiatives and strategies”. In 2013, university funds were allocated to implement Symplectic Elements in collaboration with Research Services to better manage and automate the harvesting and reporting of research outputs. Because of irregular allocation of funds and the ability to only allocate limited resources from within VU Library, the library has had to continually prioritize approaches to introducing data management services.

This approach has ensured that VU Library provides the best service possible, given available funding, to support researchers who are increasingly accountable to funders of research. Funders of research have driven the improvement of data management practices of researchers and institutions, in which libraries have a clear and important role. Researchers believe the areas in which research will change in the future are: data collection, analysis and management; collaboration with other researchers; and keeping up to date with new information technologies (Centre for Information Behaviour and the Evaluation of Research Information 2008: 27). Librarians have unique expertise and skills to assist

Table 1. Victoria University Research Repository size and use 2009–2013.

Year	Total metadata	Total full text available open access	Downloads (metadata & full text)	Percent change in downloads over previous year
2013	11,042	3001	415,639	21.57
2012	9,379	2883	341,894	13.77
2011	5,437	2196	300,522	–21.68
2010	2,373	1541	383,724	25.04
2009	1,300	947	306,881	

researchers with these challenges by sharing storage and access, and by providing preservation and curation expertise and training and awareness opportunities.

Promoting research publications through the Research Repository

Since 2006 the Research Repository has been accessible through the VU Library website. The repository uses the University of Southampton’s e-prints software, which was selected due to its graphic reporting capabilities and submission protocols. One of two facets to the research repository is to enable reporting and compliance, for example for ERA. The other facet is to enable open access to the full-text of university research outputs, with high quality metadata, to promote the university’s research profile and share publicly funded research with the broader community.

Since 2005, over 3,000 full text items have been added to the repository. Apart from content sourced through the ERA and HERDC collection processes, a significant portion of the repository includes university theses, with 1,150 added so far. These have been acquired in part through the university’s compulsory submission processes, but also through retrospective digitization of older university theses throughout 2010 and 2011. VU Library has also been able to digitize research outputs from its special collections, including significant papers from the McLaren and Crow collections containing papers from local academics connected to the university and who made a significant contribution to the intellectual life of the west of Melbourne in the post-war period.

The statistics in Table 1 on public downloads from the repository demonstrate the strong growth in usage achieved in parallel to the growth in the size of the repository and general awareness or discoverability of its contents.

In late 2008, the university became one of the five Australian universities to have a mandate for the depositing of research outputs from university researchers through 'Submission of Research Outputs of VU Staff and Students to the VU Institutional Repository' policy. This policy specifies the mandatory submission of research outputs including theses, monographs and refereed scholarly and research articles and seeks contributions at either the pre-print or post-print (last accepted version prior to publication) stage. Although the mandate attempts to cover the full range of published research outputs, it includes the qualification that deposits are "subject to any necessary agreement with the publisher" to acknowledge the range of restrictive publisher policies that delay or even prohibit the availability of an open access version of the paper. In this context, there has been only limited success with the acquisition of full text open access outputs for the repository. The proportion of full text in relation to total metadata housed on the repository has hovered between 25 percent and 35 percent over the last 4 years. Much of the strategic effort around the further development of the university repository has been to address this issue and increase the proportion of full text available on open access.

There are a number of factors reducing the success of the repository mandate, ranging from a lack of awareness among researchers, researchers' failure to retain an acceptable version of the paper for deposit, to the complexity of the copyright environment and repository deposit procedures. VU Library has promoted the repository by initiatives such as highlighting popular papers with high downloads and utilizing repository data to populate research biographies. It has also worked to reduce the burden of submission by taking on copyright checks and determining publisher open access policies. With the university Copyright Officer working within VU Library, the necessary expertise is at hand to advise on publisher agreements and related copyright conditions. VU Library also offers advice and training on where to publish. Since 2010, it has offered up to 10 sessions each year on Measuring Research Impact (bibliometrics) and Where to Publish. It also offers advice on negotiations with publishers at the point of having papers accepted.

Despite these initiatives, there are still barriers to improving the proportion of open access full text in the repository – the barriers result from the support requirements for the HERDC/ERA collections. This means that VU Library has had to focus its efforts on loading metadata and publication evidence instead of sourcing open access full text outputs. The requirements of loading evidence for the research collections

result in a workflow that leaves the sourcing of copyright compliant full text versions to the end, after the metadata has been created and the HERDC/ERA lists have been produced. As there is a long time lapse between when the research output is submitted to the publisher and when the library contacts the researcher for the author's version of the work, it is frequently the case that the author has lost the post-print version or left the university. This tension between supporting the ERA and HERDC workflows and sourcing open access research outputs is not unique to this university; as Danny Kingsley's study of the Australian open access environment suggests, this is a widespread issue:

"The requirement to collect information about research output in Australia for ERA and HERDC reporting is a double-edged sword. The research community in Australia has adapted to providing this information, albeit not without frustration at the high level of administration involved in compliance. And while some universities consider ERA to have helped the awareness of their repository and open access, overall, the evidence seems to indicate ERA has been detrimental to the promotion of open access in Australia." (Kingsley, 2013: 10)

Extending the open access role of the repository

Over the past 2 years, the library has endeavored to address the issue and scope process improvements that would better combine workflows for research collections and extending open access. The successfully integrated workflow at QUT Library (Borchert and Callan, 2013), which combines publication submission for open access with the publication collection process, has been examined by VU Library as a potential model. This approach remains out of reach due to differences in university Intellectual Property policy, limitations of resources and lack of administrative staff. The alternative approach has been to proceed with the implementation of Symplectic Elements as a research publication system which can interface with the existing Research Repository. The harvesting capabilities of Symplectic Elements associated with alerting capabilities will reduce the burden of metadata development, establish a continuous workflow for research collections and enable earlier access to research outputs closer to the point of publication. VU Library anticipates that the system will offer improved pathways for researchers to upload open access versions of their publications. Although more training and cultural change will be required to ensure successful researcher engagement, there is

the expectation that the current implementation will make it easier for researchers to load open access versions and consequently populate the repository.

Another factor that can help increase the focus on the open access role of the repository is the recently introduced mandates from Australian funding bodies which require all authors publishing publicly funded research to make their research available through open access repositories. The two primary government funding bodies in Australia, the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC), introduced mandates for grant recipients in 2012 and 2013 respectively. Although VU Library coordinates the management of article processing fees paid to 'Gold' open access sources, Biomed Central and Wiley Open Access, the Research Repository remains the easiest and most cost effective option for researchers to comply with the new mandates and make their research open access. However, in the context of open access, there is ongoing work to raise awareness amongst researchers about copyright and retaining control of their work.

There are currently no mandates for open access data. At the university the management of research data has been guided by the Australian Code for the Responsible Conduct of Research (2007) that covers the management of data and corresponding responsibilities of institutions to provide support and infrastructure. To assist universities with research data management, the Australian government has invested substantial funds for developing the frameworks to allow Australian researchers to share their data. The Australian National Data Service (ANDS) has developed the Research Data Australia (RDA) platform as the key means for sharing information about research data collections with links to the home institution, often accompanied by links to the original data. VU Library has uploaded descriptions and metadata of significant university collections, including digitized collections of unpublished papers from its special collections, to the RDA site. Even though VU Library does not maintain a data repository separate from the Research Repository, it has offered advice about cloud options such as Figshare for uploading publicly accessible data. Such options help researchers meet journal editorial and submission requirements to provide open access data at the point of publication.

Scholarly communication and e-Research: how librarians help

“Scholarly communication is the system through which research and other scholarly writings are created,

evaluated for quality, disseminated to the scholarly community and preserved for future use.” (Association of Research Libraries, 2013).

For VU Library the broad view is that scholarly communication includes all communication among scholarly peers, including informal means of communication such as social media as well as the formal or traditional scholarly communication through journal articles and books.

E-research normally refers to the use of innovative Information and Communication Technologies (ICT) such as Web 2.0 to support research and open new opportunities, particularly through collaborative approaches, as well as curation and management solutions for data generated over the entire research life-cycle to enable data sharing and repurposing, and open access. The Association of Research Libraries (ARL) “[uses] the term e-research to encompass computationally intensive, large-scale, networked and collaborative forms of research and scholarship across all disciplines, including all of the natural and physical sciences, related applied and technological disciplines, biomedicine, social science and the digital humanities” (Association of Research Libraries n.d.). E-research has the potential to increase the dissemination of research data, and to offer collaboration and engagement opportunities, nationally and globally.

Librarians have unique expertise and skills in core areas in e-research and scholarly communication to assist VU researchers with their data management. Librarians manage the environment in which knowledge can be created, discovered, captured, shared, distilled, validated, transferred, adopted, adapted and applied. As the literature review suggests, university libraries are planning services to support data management. Already VU Library manages the open access repository of university research outputs, contributes to the ANDS ‘Seeding the Commons’ project and the Research Librarian and Research Ambassadors (a peer-to-peer research support program) support researchers in their data management.

In 2009 VU Library initiated a Data Management survey which had been adapted from a survey used by three Australian universities in 2008, presented in the report by Henty et al. (2008). The university’s researchers’ survey responses indicated some key concerns around the lack of an institutional information technology framework, lack of policy support, inadequate institutional/network storage space and the need for training in data management and data planning, as well as in ICT literacy.

The survey revealed a high level of lack of awareness amongst the university’s researchers around

Table 2. Winton (2012) Research data management conversation ‘icebreaker’.**Quick ice breakers****Where do you backup your data to?**

- You can use VU research storage for back-up
- Or use it as your main storage, back-up happens automatically

How secure is your data?

- Is your computer or USB storage locked up?
- Is your USB storage password protected?
- VU research storage is!

Where are you going to keep your data after the project?

- VU and you are required to keep data for 5+ years beyond the end of the project
- Consider the VU research storage!

e-research, and isolated, individual approaches to the storage and management of data. The availability of benchmark data proved useful to situate and contextualize the results of the survey. The responses from the university’s researchers reflected the main trends in the benchmark data and there were a number of common issues, for example, the lack of plans, a range of data types, that storage sits with the researcher, and the majority of files being small.

The study, which was repeated in 2011, gathered additional data on the university’s researchers’ use of information and communication technology tools. While a majority (70 percent) indicated collaborations around Australia and 55 percent mentioned international collaborations, fewer than 20 percent reported using video conferencing, web collaboration tools or file sharing tools. Instead the majority of researchers indicated a reliance on email (80 percent), face-to-face (66 percent) and phone-based (34 percent) interactions. A third (31 percent) indicated the need for more support with technology tools to work with statistics, qualitative, transcription, video and geospatial utilities and a third indicated the need for more support with collaboration technologies, including video conferencing and sharing files. For e-research to develop there is a need to improve researchers’ digital literacy skills.

Developing digital literacies

Librarians’ interest in, and indeed fervor toward, advancing ‘information literacy’ and the application of technologies to their work as information managers who collect and organize information sources, provide access, and support the management and use of information, is long-standing. The concept of digital literacy – the use of digital technologies to manage and use information – has emerged with the growth of networked communication technologies. Bawden (2001: 2) suggested that the term ‘digital

literacy’ started to appear in the library and information science literature in the very late 1990s.

The need for digital competencies and skills is increasingly acknowledged, particularly in an educational and research context, as these capabilities are required for living, learning and working in a digital age. The digital age requires consideration of not only the information sources, but also the technologies that underpin professional practice, for example, communication and collaboration tools and social media, which is a whole way of thinking about information and its use. To researchers, interaction with information is fundamental, as is ensuring its quality. Researchers have data and materials, for example, comprehensive notes, books, and records related to research activities, including details of observations, processes and other significant actions or findings, that need to be stored long-term to enable research outcomes to be validated and justified. As well, research funders are increasingly requiring better documentation of, and (open) access to, research data.

For this purpose, the university has initiated and operationalized significant research storage space that is secure and automatically backed up. Previously researchers’ data and materials had been stored on a range of local stores. In conjunction with Research Services, the Library developed a project plan to guide the work of the College Librarians, who encouraged and assisted researchers to add their old or pre-existing research project data and materials to the university research storage space. The initiative offered an opportunity to raise awareness amongst researchers, in conversations (see Table 2), of the shift towards improving data management and of future requirements and obligations around secure data retention. As a result of the initiative, more than 20 datasets were added to the store in its first 3 months.

Weaver (2007) has been a leader in the area of library research services, unpacking data management and identifying professional development roadmaps.

Adopting Weaver's (2011) engagement continuum of Gauge, Refer, Advise, Support and Partner, VU Library identified opportunities to support researchers' responsibilities for improved management of research data. VU Library has built on the storage initiative by developing and implementing ongoing data management educational sessions and resources for researchers. It designs and delivers a comprehensive annual program of workshops to assist researchers and Higher Degree Research (HDR) students at every stage of their academic career or postgraduate studies.

These educational workshops, developed in consultation with Research Services, are geared to raising awareness within the researcher community about the discipline-specific scholarly communication environment, especially the benefits of open access to researcher visibility. With its aspirations to raise the quantity and quality of research-engaged staff, Victoria University encourages the open access publication of research outcomes towards increased dissemination, citation and greater impact. The workshops educate researchers on: (i) how to identify and target their publication of research outputs strategically; (ii) how to disambiguate personal names, for example by using open researcher and contributor ID (ORCID) to create unique identifiers; and (iii) how to build an online presence using a range of social media such as Twitter.

Working collaboratively with Research Services and the research community, the Library provides discipline-specific information that helps researchers to easily identify the top ranked scholarly journals in their field – including peer-reviewed Open Access publishing for their research outputs. In a central approach, funds to cover Author Processing Charges (APCs) in high ranking outlets and eligibility guidelines are provided by Research Services and managed by the Library. The Library has been recognized to have the expertise in scholarly communication to document and disseminate this information. At the same time, Victoria University continues its commitment to promoting green open access, in particular by providing guidance and support for researchers to maintain control over their works to enable the deposit of their works in the Research Repository. In engaging with researchers around the Open Access debate, sustainability of pay-to-publish models (APCs) and other developments in scholarly communication, the Library is taking an active and leadership role within the University.

What VU Library does at the grassroots

Through a program funded by the Graduate Research Centre (GRC) with VU Library providing in-kind

contribution, the Research Ambassador (RA) program provides peer-to-peer research support to research students and staff. The Research Ambassadors, based in VU Library's Research Lounge and other rooms, run peer-to-peer online and face-to-face consultations and regular workshops throughout the year. These interactions provide an excellent opportunity for research students to ask questions and find out more about a range of research-related topics. The RAs provide advice in a range of areas including quantitative and qualitative research design and data analysis, document formatting, EndNote, NVivo, data and file management, and library research information sources with induction, guidance and supervision from the Research Librarian. The program is based on Edith Cowan University's SOAR (Support, Opportunities, Advice and Resources) Centre ambassadorship program. The RA program began in August 2011 with the aim of contributing to building research capability at Victoria University. Every 6 months new Research Ambassadors are recruited from a range of Colleges and with different expertise. Each Research Ambassador is offered a one-semester contract with the opportunity of renewal for another semester.

Despite being vulnerable to cuts in the current economic climate, the program has been run each year since its introduction in 2011 and has built a reputation and delivered benefits beyond its cost. The popularity of the program increased by 58 percent in its first year and by 28 percent last year, with a high level (60 percent) of awareness amongst research students. The RAs operate a Facebook Page which at the end of 2013 experienced a spike in the number of 'page likes'. There has been an observation that there is a correlation between the level of engagement particular posts create and the number of page likes the RA Facebook page receives. Examples of posts on the RA Facebook page include:

"Just wanted to say how much I appreciated the help I received from the library last year especially the sessions I spent with xxx the ambassador who was very understanding of my problems and provided a style of help that was appropriate to my inabilities to retain information various areas of computer use. This is an invaluable service."

"Thank you very much again for your excellent support. Previously, I have sought support from several people, who have all made the task seem insurmountable. You have made light work of this task, and now I know how to do it myself. Your clear and concise explanations have helped me to understand how to work with this software program in the future."

The program provides opportunities for peer-to-peer support using a range of skills, to learn from others, and to contribute to the university's research culture. It also provides research students an opportunity for employment and the development of increasingly desirable generic and transferable skills by fostering organizational, communication and team work skills.

“Being a RA enables me to expose myself to the other disciplines colleagues are working on, which broadens my vision and enable me to approach my own research assignment from multiple angles. I wish I could spare more time learning from other RAs, as a process toward my professional development.”

Applying the Research Skills Development Framework

In another initiative aimed at developing research skills at grassroots level, VU Library has situated its practice and contribution to the development of independent and flexible lifelong learners by using the Research Skills Development Framework (RSDF) to integrate into the curriculum the skills to use information effectively and appropriately. Through this strategic, curriculum-based approach, the Library which has lean and static staff numbers, aims to maximize its ability to enhance students' research and enquiry skills for higher level research studies and/or professional practice. Based on the Australian and New Zealand Information Literacy (ANZIL) Framework and Bloom's taxonomy, the RSDF was developed at the University of Adelaide (2006) and outlines explicit and incremental development of research skills consisting of six facets of research and five levels of student autonomy. The Framework was devised to embed research skills development in the curriculum. According to Willison (2012), there is evidence that, as a result of its application, students acquired a range of discipline-explicit skills which would be beneficial for their later studies as well as for employment. The approach encourages a whole-of-course view, a multi-professional team-based approach to curriculum alignment. It is applicable to a range of discipline areas, and has the potential to strengthen pathways to research, which is important for this university. The RSD approach also offers a pathway to fully integrating digital/information literacy skills into curriculum and to supporting institutional strategies. VU Library's introduction of the RSD approach is in the early stage of implementation; the Library is working with the Pro-Vice Chancellor Research and Research Training and the Pro-Vice Chancellor

Learning and Teaching to gain university-wide endorsement for the approach.

The expanding role of VU Library

The need to shape the use of, and respond to, digital technologies for the management and use of information has increased with the growth of networked communication technologies. ICT skills are deemed essential for contemporary practitioners in the field of library and information science. As the CIBER report (2008: 21) indicates: “We are all [the] Google generation now”. The effective and critical use of our contemporary, information-rich environment is of strategic importance, not only to library staff, but to the students whose online research and enquiry skills they must help develop, as well as the academic staff and researchers they are tasked with supporting. While on-the-job learning continues to be integral to the development of new skills for librarians, VU Library is constantly enhancing the information and data management skills of its librarians, and ensured that it has the adequate team structure to help increase research quality and output.

Scholarly Information Services team

In the past 2 years, VU Library has fundamentally changed the level of service it provides to support research across VU through the formation of the Scholarly Information Services (SIS) team. This change of focus was driven by the Library's decision to explicitly support the university's strategic goals of increasing research quality and output. The SIS team members, consisting of College and SIS Librarians and a Research Librarian, are proactively involved with the staff from all the Colleges, research centers and institutes in order to help build the university's research as articulated in its strategic plan. These librarians work directly and primarily with colleges and researchers, providing a range of instructional, collection, data management and scholarly publishing advice and assistance. As new areas emerge, the librarians engage in a range of interactions to identify new approaches and support resources or services. It is a way of working. To support this way of working, and in the context of the research support skills training shortage as identified in Auckland's (2012) report, VU Library has introduced new development opportunities for its librarians around data management and open access as per the discussion in earlier sections of this article. In addition, VU Library has undertaken a program of project management training for its librarians. As certified Prince2 (Foundation) course graduates, the librarians apply the framework and its

Table 3. VU Library beta roadmap for research support.

Research facet	Current focus of research support	Future focus
Find /generate	Search skills Information discovery	Data consultation Data management planning
Evaluate Synthesize, Analyze	Literature review	Data analysis Data/text mining
Organize	Organize published works with tools like Endnote	Structure data and metadata using a range of methods and tools Disposal and retention
Communicate	Thesis writing Publication options	Options for data and research dissemination including social media Changes in scholarly communication Repository services
Academic integrity	Referencing Manage intellectual property Copyright Fair use of publications	Privacy Confidentiality Copyright & data re-use & licensing Compliance/reporting mandates

methods to a range of projects small and large, finding it a sensible approach to temporary work involving a group of people brought together around deliverables.

To develop a high level of knowledge and understanding of the needs and expectations of researchers in a fast-changing environment, VU Library has invested in further training and development opportunities for its librarians to stay current with new technologies, innovations, and ways of thinking. Colleagues from Monash University Library, namely Groenewegen (2013) and Searle (2011), have articulated the current expertise of librarians, and suggested how these might be extended in the support of researcher needs in the research data management (RDM) environment. Essentially the concept is a visualization that identifies new practices and maps the way in which new skills can be built on existing skills. VU Library has adapted this idea to develop its own roadmap (Table 3) for research support practices.

Librarian training to foster research culture

At VU Library, training and development opportunities have included in-house and external staff development initiatives. The in-house train-the-trainer sessions, which are held annually, have addressed topical issues. For example, in 2013, the session “New (e)research skills” addressed how to analyze researcher scholarly information needs, including research-impact or bibliometrics; the emerging research data management (RDM) roles for librarians; and the planning of educational programs for researchers.

In another initiative, three university libraries in Victoria came together to organize the running of a one-off, 5-day intensive staff development held in early 2014. The intensive training, Research Support Services for Academic Librarians, was based on a unit offered within the QUT Master of Information Technology (Library and Information Studies). It aimed to develop the knowledge and skills required to provide specialized services and assistance to researchers throughout the research lifecycle in the context of academic and special libraries. The course content ranged from data mining to assessing impact; from open access to grant preparation support to the national research agenda.

VU Library as advocate

Since 2010, the Library has initiated and hosted forums during Open Access week to raise awareness within the research and university community to the era of openness and the options available to make research visible. The forums have also aimed to tackle misconceptions around quality, lack of peer review, pay-to-publish models and the challenges of the copyright context, and to reassure researchers that they can publish in their preferred journal and yet make their work accessible via open access by placing a copy in the university repository. In 2013, VU Library organized its most ambitious OA week event, a day-and-a half-long forum with speakers from VU Library, Research Services, the Colleges and two external speakers. It was also the most successful to date with more than 50 people in attendance during the day-long event.

The Library is also a member of the Australian Open Access Support Group (AOASG). At the end of 2012, the University Librarian was invited to represent the university as an inaugural member of AOASG. Other members of AOASG include: Australian National University, Charles Sturt University, Macquarie University, University of Newcastle, and Queensland University of Technology. The group aims to provide advocacy and publicity for open access to research in Australia. It meets regularly and has developed a website which includes resources and advocacy materials (Australian Open Access Support Group, 2013). As the AOASG website states: "The group will lobby government, have a media presence, and provide advice and support to both research funding agencies and research institutions on how to best implement open access policy, practices and supporting infrastructure."

In support of this direction, the Library has articulated the desirability of an open access publishing option for the university. An Open Access electronic press for the university would contribute to a culture of research excellence and disseminate high quality university scholarship where there is no ready commercial market. In a transformative collaboration between the College of Law and Justice and the Library, the *VU Law and Justice* journal (VULJ) has been published in 2014 as an online open access scholarly law journal. The College established the editorial committee, arranged the peer review process, managed acceptance of articles and uploaded the final articles to the platform. The Library's role was to negotiate the licence and access to the Open Journal Software (OJS) platform and assist with technical issues and uploading of articles. The journal is available on the new platform and it is expected that it will receive considerable traffic and have an impact nationally and internationally.

Conclusion and continuation

We have outlined some of the initiatives undertaken by VU library in providing research services to an emerging research university. The initiatives represent a synthesis of our professional skills and expertise which are combined with deep collaboration with the university research community, not only across the university but at all different levels: the institutional level, the researchers' level, the students' level in terms of student experience, and the curricular level. This has been supported by new research support systems and infrastructure and ongoing librarian training and development in a planning and review framework. All these efforts

contribute to VU Library's aim of fostering the university's research culture.

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He has been involved with the education sector all his working life, starting in Victorian secondary schools and TAFE colleges before moving to University libraries in 1999. In 1993 Ralph and his family spent a year in Nanjing, China, where he taught English at the Jiangsu Institute of Education. He then spent four years working at the RMIT Library, starting as Manager of the Business Library and progressing to Manager, Corporate Services. From 2002 to 2009, Ralph was Associate Librarian, Information Systems at the University of Western Australia. While in this role, he took a keen interest in staff training and the professional development of library staff, particularly in the areas of leadership, project management and e-learning. Contact: Victoria University, Building P, P415, Ballarat Road, Footscray, VIC 8001, Australia. Phone: +61 3 99194946. Email: Ralph.Kiel@vu.edu.au

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The rural library's role in Ugandan secondary students' reading habits

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Abstract

This study explores reading and library factors related to secondary school student academic outcomes in rural areas in Uganda. This mixed methods study utilized quantitative data collected as part of a more extensive project to explore six student factors in relation to students' school, library, and home environments. The Kitengesa Community Library in Uganda (www.kitengesalibrary.org) served as the site for this study. The factors explored for this study include reading frequency, library use frequency, library access, overall grade average, and presence and type of reading materials in the home. Results indicated that both reading frequency and certain types of reading materials read for recreational purposes are correlated with higher overall grade average. Reading frequency was positively correlated with student overall grade average for all students.

Keywords

Academic achievement, community libraries, factors, impact, Kitengesa Community Library, rural village libraries, secondary students' reading

Introduction

There exists a complex matrix of challenges related to education in Africa, including classrooms with few scholastic resources and teachers with no access to supplemental reading materials (Kevane and Sissao, 2004; World Bank, 2008), poverty, lack of access to healthcare, terrible living conditions, unstable civic and democratic environments, and lack of financial resources (Okidi and Mugambe, 2002). This study explores four reading and library factors that might be related to secondary school student academic outcomes in rural areas in Uganda, where only 18% of girls and 20% of boys are enrolled in secondary school (Ugandan Bureau of Statistics, 2009) and the secondary school pupil: teacher ratio is 18:1 (Ugandan Bureau of Statistics, 2009). The mixed methods study utilized quantitative data collected as part of a more extensive project to explore four student factors in relation to students' school, library, and home environments. The Kitengesa Community Library in Uganda (www.kitengesalibrary.org) served as site for the study. The factors being explored for this study were selected because they provide a snapshot of

secondary school students' lives in this environment across critical domains.

Literature review

The rural village library

Rural village or community libraries have existed in Africa for many years and have been documented by researchers such as Alemna (1995), Mostert (1998), Rosenberg (1993), Stilwell (1989, 1991), and Sturges and Neill (1998). These small, one-room libraries operate in areas without electricity, paved roads or running water, and they serve rural communities that have no other access to reading materials. The development of these libraries grew out of the need to compensate for certain deficiencies of the traditional public library in Africa. Stilwell (1989: 264) writes, "the needs of the colonized were subservient,

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if considered at all.” The author goes on to carefully cite instances in South Africa whereby the colonizers attempted to prevent Africans from utilizing the public libraries. At present, the public library in Africa suffers from profound underfunding and out-of-date collections (Stilwell, 1989). Furthermore, these libraries are often located in the urban centers, as is the case in Uganda, whereas 88% of the population live in rural areas (UNICEF, 2011). For these reasons, the public library is not used by a majority of the population. The rural village library, where one exists, is often the only alternative means of providing reading and information materials for rural peoples. In many areas, these rural village libraries also serve as school libraries because there are no other such local resources. In the case of the Kitengesa Community Library, having access to resources locally allows residents to engage in both recreational and academic use of the library closer to home.

Kitengesa – the site for this study – is a rural village in southeastern Uganda. It is a small community, and up until 2004 there was no running water or electricity. To date such utilities are still limited to a few households. Masaka is the closest town, located about eight miles away. The library was named Kitengesa by its founders, who wanted it to share a name with the school, Kitengesa Comprehensive Secondary School which is just next door. The Kitengesa Community Library is not an official school library, but it fills that role in the village and surrounding areas. The library can seat about 100 users in three separate rooms. The current collection is 3074 books, and the library also subscribes to a variety of daily newspapers. There are currently more than 1300 members recorded in the library’s membership database, and some 31,722 visits to the library were recorded as of Fall 2013. Membership is free for students and teachers who work at the nearby Kitengesa Comprehensive Secondary School, and community members are asked to pay \$1.00 per year in order to check out books. The library is maintained by a small staff, which includes three librarians and seven library scholars – students who work at the library in exchange for school fees or other educational expenses. Funding for the library comes exclusively from individual donations and grants – no government support is provided for the library. The Kitengesa Community Library is only one example of a working rural community and school library. Recently, Uganda has experienced growth in the development of other rural village and community libraries. The Uganda Community Libraries Association (UgCLA) was founded in 2007 with only 14 libraries. As of December 2011, there were 67 community/rural

libraries scattered across the country of Uganda (Parry, 2011), and more than 120 as of September 2014. Some of these libraries were in existence before the founding of UgCLA, but not many. Most were founded as a result and with the support of UgCLA (Parry, 2011). There are also rural village libraries in west Africa, South Africa, and a number of other African countries. The increase in the sheer number of these libraries provides strong presumptive evidence of their perceived need.

The impact of the library on academic achievement

Benefits of school and other types of libraries have been explored vigorously in the West, in many cases, by exploring relationships between standardized test results and student library use (Fisher et al., 2001; Oberg 1999; Pharr 2002; Todd and Kuhlthau 2004; Williams et al., 2001; Yoo 1998). These studies examined the correlation between library use and student performance, and surveyed a range of students, from elementary age to high school, as scholars attempted to examine in depth the relationship between school library use and academic achievement (Oberg, 2001: 11). “Using student performance on standardized tests as a means of measuring student achievement, Lance successfully correlated quality school library media programs with increased school performance on standardized tests” (Small et al., 2009). These and other studies “have clearly established the relationship” between test scores and libraries (Small et al., 2009). Krashen (1995) found that the ratio of school library books per student was a solid predictor of student performance on fourth grade reading tests. Whitmire (2001) constructed a study to investigate library services and the educational outcomes of students. The methodology examined a series of dependent variables, including grade point average, and independent variables, including library use frequency. There have been no extensive studies on the relationship between rural village libraries and academic achievement in sub-Saharan Africa; however, Bristow (1992: 75) provides anecdotal evidence that access to books and other reading material as part of the curriculum in certain African countries enhances student learning. In addition, a small study conducted in Uganda by a library studies Bachelor’s degree student at a university in Kampala examined a local school and the impact of the library on student performance (Lutaaya, 1999). The study found that a significantly higher percentage of students with a school library passed their “O” levels than the percentage of students without access to such a library (“O” levels are examinations taken by

secondary education students at the approximate equivalent of Grade 11). In 1998, 77% of students at the school with the library passed their "O" levels, compared with 60% of students without the library. The author found similar results for 1995 (63% compared with 10%), 1996 (81% compared with 21%) and 1997 (68% compared with 35%). The author goes on to conclude that the library had some degree of impact on student performance. The library in this study was not a rural village library, which is an important distinction. Despite this, the results from the study can still reveal something about the impact of having access to a library in the African context.

Reading frequency and academic achievement

The literature on frequency of book reading and early literacy skill development for young children is robust, but the literature on reading frequency and the relation to grades for secondary school students much less so. Bus et al. (1995) suggest that reading frequency can be used to predict the strength of literacy development in children. Wigfield et al. (2004) explored reading frequency in relation to student motivation and found that secondary school students who were inspired to read by non-classroom or extracurricular activities read more. This context is highly relevant for the Kitengesa Community Library, which places a great deal of emphasis on leisure reading (Parry, 2008). McQuillan and Au (2001: 225) suggest that the "amount of reading done both in and out of school" can explain differences in students' academic achievement. More relevant to this study, the authors suggest that it is the combination of easy access to printed reading material and reading frequency that predict academic outcomes. Easy access to reading materials may play a role in motivating students to read more. Morrow (1992) found that students who had access to both a physical space to read and to reading materials dramatically increased their reading frequency. Other studies support this notion and demonstrate connections between motivation, reading frequency, and academic outcomes (Baker, 1999; Neuman and Roskos, 1993; Rucker, 1982). Reading frequency is classified by some researchers as being part of a constellation of "literate behaviors" (Neuman and Roskos, 1993) that include reading interactions with parents, teachers, and peers in a variety of settings, including the home, school, and the library. Other studies have explored the links among exposure to printed material, reading frequency and reading achievement by implementing an author-recognition

measure (McQuillan and Au, 2001). Students who recognize more authors from a checklist are assumed to have read more, thus increasing their familiarity with these authors (West et al., 1993). Ramos (1997) found that students who were taken to the library more often read more. In their study, McQuillan and Au (2001) were careful to address possible confounding variables such as reading ability. Students who are better readers, they suggest, are likely to read more, so the exploration of print access on reading frequency was assessed independently of this factor.

Presence and type of reading material in the home and academic achievement

The presence of reading materials in the home may vary by factors such as geographical location and educational level of adults or parents in the home. While it is atypical to find rural homes replete with reading materials, urban homes may have more reading materials available. During their study, Dent and Yannotta (2005) found that very few families in Kitengesa who were surveyed had reading materials in the home. The exception was the presence of religious texts such as the Bible or Koran. Student responses to the same question, "Do you have reading materials in your home?" supported the finding that many homes did indeed have religious materials (Dent and Yannotta, 2005). Door-to-door visits to village homes revealed that although many homes did indeed have religious texts, very few household members could actually read those materials (Dent and Yannotta, 2005). In their Uganda-based study, Muwanga et al. (2007) found that 82% of students surveyed in the capital city of Kampala reported having non-text book reading materials (NTBRMs) in their homes, while only 37% of students in the rural area of Iganga had NTBRMs in the home. The study also found that there was a correlation between parents' education and the amount of NTBRMs in the homes. The authors suggest that reading culture development is influenced heavily by the home environment, and the presence of NTBRMs is especially important. In a study of primary school reading achievement in 12 African countries, Hungi and Thuku (2010) found that the average number of books in the home was an important predictor of reading scores:

In Lesotho, Mauritius, and Seychelles, pupils who had more books at home were likely to achieve better in reading compared with pupils who had hardly any books at home. Books at home is an indicator of reading culture of the family but it is also related to pupil SES because more educated parents are likely to have more

books at home than less educated parents. (Hungu and Thuku, 2010: 96)

In another study, researchers found that “the number of books owned by the students in this study was significantly correlated with both reading frequency and reading achievement” (McQuillan and Au, 2001: 243). On the other hand, print materials found in the homes of students from lower socioeconomic status (SES) areas were reported as being of little interest to the students themselves (McQuillan and Au, 2001).

Research questions

The research questions and associated hypotheses were explored by comparing two groups of students – one group with library access and one group without. There are four main factors explored by the research questions, defined as follows. Reading frequency is described as the average number of reading hours per week during the previous school year, and library use frequency is described as the average number of library visits per week over the course of the previous school year. Library access is described as whether a student has access to a village library or not. Students’ overall grade average (OGA) refers to the average of mid- and end-term grades across all school subjects for the previous school year. The presence of printed materials in the home refers to whether or not students have reading materials in the home, and the type of reading materials reflects the categories of printed materials in the home (religious, newspapers, etc.). Reading materials might be religious materials (such as the Koran or the Bible), pamphlets, newspapers, magazines, and books of any sort. The research questions were as follows:

- RQ1: What is the relationship between students’ rural village library access and overall grade average (OGA)?
- RQ2: Is students’ reading frequency (i.e. the average number of reading hours per week over the course of the previous school year) correlated with higher OGA regardless of library access?
- RQ3: Does the presence of printed materials in the home predict the OGA of students, regardless of library access?
- RQ4: Does the reading of specific printed materials in the home for recreational purposes predict the OGA of students, regardless of library access?

Method

Participants

The data for this study were initially collected in 2005 as part of a larger study by Dent (2006), which specifically explored library impact on student outcomes. The convenience sample for the study consisted of a total of 87 students from two secondary schools in the greater Masaka region of rural Uganda; 45 students (ages 13–17) from the Masaka School and 42 students (ages 13–17) from the Kitengesa Secondary School. A convenience sample was used since this is the library and the schools to which the researcher had access, and the construction of this sample was in keeping with minimum sample sizes for a given population as described by Bartlett et al. (2001). Inclusion criteria for the students in the library group included access to and use of the Kitengesa Community Library and status as a student at the Kitengesa Comprehensive Secondary School. For the non-library group, inclusion criteria included status as a student at the Masaka School, and no reported access to a library. The students attending both schools hail from similar socioeconomic and environmental backgrounds. Socioeconomic background was assessed primarily by looking at certain student and family factors within the educational framework (Aikens and Barbarin, 2008). The headmasters at each school independently confirmed their school fees were set according to the ability of most parents to pay. The school fees were the same at both schools. The headmasters also confirmed the percentage of parents each year who were unable to pay these fees, which might also be an indicator of comparable SES in both areas. The students without library access are approximately eight miles from Kitengesa, making it unlikely that the Masaka students use the Kitengesa Library. The villages were matched on demographic variables for the study. A team of research assistants in Uganda helped the researchers to recruit the participants, and also served as translators during the data gathering. Institutional Review Board (IRB) approval for the study was granted by Hunter College in New York City.

Measures

Data for this study were gathered from a 24-question questionnaire, handwritten library logs, student grade logs (which contain the students’ grade averages), and the library’s local circulation database. The questionnaire provided information about frequency of library visits, reasons for library visits, the number of books checked out, and general reading habits. For the students without access to the library, the same questions

about reading habits were asked, but there were no questions related to library use.

Procedure

Subjects for the proposed study were recruited from both school sites by the researcher with the aid of the headmasters at both schools, and with the assistance of the Kitengesha librarian. Discussions with each headmaster were initiated formally by hand-delivered introductory letter in advance of the researcher's visit, then by in-person visits to introduce and explain the study. Copies of the appropriate IRB documentation and consent forms for the student participants were provided to each headmaster, and the complete protocol was explained. Consent forms for parents were sent home with the students and returned to the each school's headmaster. Class rosters for each grade (S1–S4) for the previous year were collected separately at each school. Using the rosters, all students in each grade were randomly assigned a number using random number generation. Approximately 10 to 11 students from all four grades at each school were then randomly selected to participate in the study, also based on random number generation. At the Masaka School, the questionnaire was administered to the participants during lunch recess, in an unoccupied classroom. At Kitengesha Comprehensive Secondary School, the questionnaire was administered to the participants during lunch recess, in the library. The questionnaire took approximately 45 minutes to one hour to administer. The questions for the questionnaire were read aloud to students in both English and in Luganda (by a translator), and students were asked to indicate their responses in English. The students also had the questionnaire in front of them while the questions were read aloud to them.

Data analysis

The quantitative data were entered into SPSS, a statistical software program, for analysis. The specific statistical analyses consisted of a Mann Whitney *U* test to explore the hypothesis related to library access and OGA, and a Pearson correlation to test the hypothesis related the questions about reading frequency and impact on students' OGA. A Pearson correlation was also used to explore the presence and type of printed materials in the home, as well as the reading of these materials.

Results

Library access and OGA

The research question was: What is the relationship between students' rural village library access and

overall grade average (OGA)? One initial assumption of this study was that students who have access to and use a rural village library would have higher OGAs than students who do not. This assumption was supported by previous studies conducted by researchers (Bristow, 1992; Lutaaya, 1999), which provided anecdotal evidence that access to books and other reading material as part of the curriculum in certain African countries enhanced student learning. An independent-samples *t*-test comparing means of the overall average grades for library users ($n = 42$; $M = 43$; $SD = 17.5$) and non-library users ($n = 45$; $M = 47$; $SD = 15.6$) revealed no significant difference between the groups ($p = .27$). For library users, the highest OGA was 74 and the lowest, 4. For non-users, the highest OGA was 78 and the lowest, 15. Because no significant differences between the two groups on OGA were found, subsequent stratified analyses were conducted with the two groups combined.

Reading frequency and OGA

The research question was: Is students' reading frequency (i.e. the average number of reading hours per week over the course of the previous school year) correlated with higher OGA regardless of library access? Findings revealed a significant Pearson correlation between reading frequency and OGA of all students in the sample ($r = .31$, $n = 87$, $p = .003$).

Presence of printed materials in the home and OGA

The research question was: Does the presence of printed materials in the home predict the OGA of students, regardless of library access? A Pearson correlation revealed that simply having reading materials at home was not found to be correlated with OGA for the students ($r = .001$, $n = 87$, $p = .996$).

Reading of specific printed materials in the home for recreational purposes and OGA

The research question was: Does the reading of specific printed materials in the home for recreational purposes predict the OGA of students, regardless of library access? Findings indicated that the reading of the Bible during recreational time (not for school purposes) was positively correlated with the overall class average of all students in the sample ($r = .31$, $n = 87$, $p = .003$).

Discussion

Library access and OGA

The most striking difference between the studies conducted by Bristow (1992) and Lutaaya (1999) and the current study is the dependent impact variable (overall class average), which may provide one way to explain the null findings. Each of those studies used standardized tests as a way to explore academic achievement, providing a level of certainty and stability in terms of exam content. The literature indicates that standardized test scores are a reliable way to measure academic impact (Fisher et al., 2001; Oberg, 1999; Pharr, 2002; Todd and Kuhlthau, 2004; Williams et al., 2001; Yoo, 1998). The current study did not have access to standardized test scores, and instead used the summed averages of subject tests created by the teachers themselves. The tests at the two schools were different. The only way to guarantee that the overall class average was comparable across schools would be if the exams had been same. The level of difficulty of the tests should also be considered, although this factor is largely unknown. Teachers at the Kitengesa Comprehensive Secondary School are frequent users of the library, and during focus groups and interviews conducted by Dent and Yannotta (2005) and Dent (2006), they explained that they use library materials to help prepare their subject exams. The access to library materials may in fact allow teachers to create more comprehensive – but also more difficult – exams; whereas teachers at Masaka School who have no access to library materials may produce tests that are not as difficult. As a result, student test scores at Kitengesa may be adversely impacted because their subject tests are more difficult. Additional research to explore this idea would then make use of a mediational model test the library's impact – the effect on academic achievement of the students may actually be mediated by the teachers' use of the library. The teachers' use of the library as a variable was not addressed in this study, but may very well be significant in a number of ways.

The library's collection and the connection to frequency of library use may also be relevant. Access to books has already been demonstrated as important in terms of reading; however, Smith et al. (1997) state that students need access not only to books but also to a wide variety of titles as well. This is because without a highly diverse collection, students quickly lose interest in reading the same types of materials over and over (although this might not apply globally to all students at Kitengesa). The Kitengesa Community Library collection has grown significantly since the library's inception; however, at the point when the

data for the current study were gathered, the collection was far less diverse and much smaller. It could therefore be the case that this lack of diversity early on had a nonsignificant impact on student use of the library.

Reading frequency and OGA

Ninety-seven percent of library users and all of nonusers reported that they read for five hours per week or more. Of both users and nonusers 55% read for 10 hours per week or more. The average number of hours spent reading per week for library users was 10.4 hours, for nonusers, it was 10.5 hours.

More reading was associated with higher grade averages for all students. This finding is supported by the literature (Bus et al., 1995; Dent, 2006; Small and Snyder, 2010; Wigfield et al., 2004). Although this finding is not solely related to libraries, in Kitengesa, the library provides reading materials for the students and is thus assumed to play a role. These findings are also indicative of the fact that students who do not have access to reading materials via a library are also reading, which is having an impact on their OGA. Krashen (2004) suggests that reading of all types is crucial to student learning. Reading, suggests Krashen, develops critical thinking skills, improves test scores in a variety of subject areas, and improves student writing, grammar and spelling. Krashen (2004) also suggests that reading activities should be both structured and free and voluntary, and that these efforts work best “when students truly have choice, when the program is consistent and continued, and when teachers are also reading when students are reading” (p. 4). Students need to be able to read for extended periods of time – this immersion stimulates their interest and leads to even more reading (Krashen, 1996). In addition, Krashen (2004) suggests that increased collaborations between teacher and librarian, increased collection size and diversity, and the infusion of additional funding may all be important factors in terms of increasing reading frequency of students.

Presence of printed materials in the home and OGA

A Pearson correlation revealed that simply having reading materials at home was not found to be predictive of overall class average for the students ($r = .001$, $n = 87$, $p = .996$). In the current study, 94% of all students surveyed reported that they had printed materials at home. In their 2010 study, Hungi and Thuku (2010) found that presence of books in the home did have a positive impact on student achievement in three out of 12 countries. The researchers surmised

that this factor was related to both student socioeconomic status and parental education.

Reading of specific printed materials in the home for recreational purposes and OGA

In the current study, several types of printed material were explored in terms of their impact on the overall grade average of the students, including books, the Bible, the Koran, pamphlets, newspapers, and magazines. Of the library users 57% and of nonusers 46% reported that they had a Bible at home. Religious literacy (Openjuru and Lyster, 2007) has been described as one of many literacies in Uganda, and there is certainly emphasis on the reading of religious material. What is not clear is why certain religious content proved statistically significant over other types of materials like non-religious books. The finding could be due to the fact that many students reported having the Bible at home and perhaps have been exposed to this reading material for much longer than any other type of reading material. Students who attend church may be reading the Bible or other religious materials within contexts outside of the classroom and library, thus their overall reading frequency might be increased. Students also indicated that they read the Bible in their spare time which might mean increased reading frequency. Bibles may be freely distributed unlike other types of reading materials, thus access to these materials might be a factor. Muwanga et al. (2007) suggest that the presence of NTBRMs can impact student achievement, and Ellis and ter Harr (2004) suggest that religious literacy has a profound impact on the minds and thoughts of African peoples; thus, students may be predisposed to reading religious materials in order to understand more about the world around them through a religious lens. According to Ellis and ter Harr (2004), the Bible and the Koran are held in high regard by many and are connected to a larger institutional framework, thus these are print materials that may rise above the general skepticism that other types of printed matter may be subject to in Uganda.

Limitations

There are several limitations that may have impacted the study's outcomes. The student OGA data were not from standardized tests; thus, parity could not be established. As a result, it is difficult to sort out the impact of this non-standardization on the students' test performance and the degree to which this affected the calculation of the OGA. Future research might collect more recent data and explore changes over time in the areas being studied. For instance, recent

OGA and library use data could always be compared to the baseline OGA and library use data collected for this study for a more complete analysis of the topic.

Another limitation was the type and scope of variables used. The current study explored only student-level factors. This made sense in light of the fact that the study focused on students; however, a more robust study may have included library-level variables such as number of librarians, size of collection, and opening hours. This type of exploration is in keeping with library impact studies conducted by Lance et al. (1993). Hungi and Thuku (2010) looked comprehensively at school, student, and teacher-level factors for a more robust exploration of academic impact. The lack of a random sample from which the participating schools were chosen was also a limitation. While the student participants were randomly selected and randomly assigned, the schools themselves were selected based on convenience due to their availability to the researcher. Convenience sampling can be useful when random sampling is not possible (Marshall, 1996), but care should be taken to express the limitations of such a sample when presenting the study. There may be several confounding or unexplored variables that were invisible to and unexamined by the researcher that impacted the outcome. English proficiency may be one such variable. It was not considered as part of this study, but may impact students' academic performance for both users and non-users.

Conclusion and recommendations

This study explored several factors related to student academic achievement, with the rural village library as the backdrop. The findings suggest that reading frequency and certain types of reading materials read for recreational purposes are both correlated with higher overall student grade averages. Reading frequency was positively correlated with student OGA for all students. In Kitengesa, the library should therefore continue to support more student reading, in part by expanding the collection's size and diversity. The study has demonstrated that not all materials read for recreational purposes impact student academic achievement, but that reading of the Bible is statistically correlated with higher OGA. As mentioned above, the reasons for the significant finding might have to do with access and exposure to this type of reading material, motivation to read this type of religious material because of the importance of religion in the culture, exposure to religious influences in everyday life as well as the widespread suspicion of the veracity of nonreligious print materials.

Increasing access to a variety of religious reading materials might introduce more students to the library.

Future research will expand the scope of the work done so far by assessing different user groups. A longitudinal analysis of library impact beginning with preschoolers and following such a cohort into the high school years is currently underway. In addition, the researchers are also evaluating the effectiveness of a library-sponsored literacy-promoting intervention (in this case, an intervention called the Storytelling/Story-Acting (STSA) activity) by conducting randomized controlled trials that relies on random assignment to demonstrate causality. These efforts will eventually coalesce into a cohesive formulation of the many facets of library impact.

In the village of Kitengesa, the rural village library serves as part of the learning environment for students. The rural village library movement continues to grow, and finding ways to increase the positive impact of these libraries on student academic outcomes should be explored. The findings themselves can serve to refine the framework for future research in these areas, and also provide the impetus to re-examine previous research on similar topics. Rural village libraries do not operate in a vacuum, and the current study has shown us that factors well beyond the library's control may be partially moderating (positively or negatively) the library's influence in this regard. Accordingly, one recommendation might be to work on certain factors that have been shown to increase positive library impact on student OGA, including the diversification of library collections and curricular collaborations with teachers (Krashen, 1995; Oberg, 2001). In many ways, the Kitengesa Community Library has already taken on these tasks through local programming targeting specific student groups (like girls and pre-school children) and collection building. These lessons are key for newly minted rural village libraries.

This study is primarily about secondary students, who are the fastest growing population in Uganda (Population Reference Bureau, 2011). It is hoped that this study can inform and support the further exploration of factors that may enhance student outcomes, including the establishment and growth of the rural village library and related programs in Africa.

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Author biographies

Geoff Goodman PhD is Associate Professor of Psychology in Long Island University's Clinical Psychology Doctoral Program. Dr Goodman is the author of many articles on the development of psychopathology and psychotherapy process in high-risk infants, children, and adults. He published *The Internal World and Attachment* (Analytic Press) in December 2002, and three more books in January 2010: *Transforming the Internal World and Attachment* (Vols. 1 and 2) and *Therapeutic Attachment Relationships* (Jason Aronson). In 2006, Long Island University awarded Dr Goodman the Trustees Award for Scholarly Achievement for his first book. In 2013 and 2014, Dr Goodman published two more books: *Rural Community Libraries in Africa: Challenges and Impacts* (with wife Valeda F. Dent and Michael Kevane; IGI Global) and his first children's book, *Daddy's Secret Cedar Chest* (Tate Publishing). In 2013, he was awarded the J. William Fulbright Foreign Scholarship by the US Department of State. In 2014, Geoff and Valeda spent eight months working in two rural village libraries in

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Valeda Dent PhD is Dean and Chief Operating Officer for the Long Island University Libraries and the Interim Director of the Palmer School of Library and Information Science in New York. She holds an MSW and MILS from the University of Michigan and a PhD from the Palmer School at Long Island University. Her research interests include information literacy, rural libraries in Africa and related literacy and reading habits, and ethnographic approaches to understanding the user experience. She has published a number of books, including *Keeping the User in Mind: Instructional Design and the Modern Library* (2009) and *Qualitative Research and the Modern Library* (2011). Her third book with co-authors Geoff Goodman and Michael Kevane is titled *Rural Community Libraries in Africa: Challenges and Impacts* (2014). Dr Dent's longitudinal research on rural village libraries in Uganda and elsewhere in Africa has spanned more than eight years and in 2013, she was awarded the J. William Fulbright Foreign Scholarship and spent eight months in 2014 working in two rural village libraries in Uganda, establishing an intervention program to facilitate the development of school readiness skills in preschool children.



Conservation of library collections: Research in library collections conservation and its practical application at the Scientific Library of Tomsk State University

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Abstract

Limitations in the field of preservation of library collections have resulted in the destruction of many important documents, including rare books and manuscripts that, until recently, have not been sufficiently addressed. Although scientific approaches to document preservation have been developed, successful application has been met with substantial constraints in practical application. The Scientific Library of Tomsk State University is one of Russia's major libraries, storing approximately 3.8 million items including manuscripts and rare books. However, there have been significant challenges in preserving the library collection and remediating damaged documents. Knowing that this 'book treasure trove of Siberia' was at risk of continuing degradation and in some cases complete loss due to various sources of decomposition, Russian authorities have increased emphasis on preservation, including additional funding. With this increased focus, researchers have revisited the approach to preservation and conservation including improved monitoring of storage facilities and collections, and deployment of better practices of preservation and restoration. In addition, the team rolled out a process to create electronic versions of the library collection to reduce physical access, thereby minimizing further damage. The purpose of this article is to describe the practical application to conservation, using the Scientific Library of Tomsk State University as a case study to demonstrate the successful outcome of an enhanced approach. While environmental conditions at the library were specific to a single location, the approach is believed to be applicable with similar efficacy to conservation efforts more broadly. However, additional funding, for which there is currently insufficient budget related to this specific study, will be necessary to fully complete these enhanced practices.

Keywords

preservation, conservation research, rare books, microbiological conditions, storage, restoration, digital preservation. Russia

Introduction

The degree of commitment and allocation of resources to preserve rare documents varies greatly in different countries depending on the degree of economic development and the perceived importance, by government and non-governmental organizations, of retaining such documents. The issue of low prioritization of document preservation has been widely discussed by UNESCO, the International Committee of the Blue Shield and IFLA, to name a few. To address this issue, many leading libraries of the world now participate in

the IFLA Preservation and Conservation long-term program of preservation improvement.¹

In Russia prior to the 21st century, document retention and preservation was of little importance,

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resulting in the destruction of a significant number of highly important and valuable documents associated with Russia's national cultural heritage.² However, at the beginning of 2000, awareness of document preservation increased significantly due to increased focus on the importance of the country's national heritage and the fact that so many culturally important works were lost. Responding to this issue, in 2000 the Ministry of Culture of the Russian Federation adopted the National Program for the Preservation of Library Collections. This program greatly heightened the importance of document preservation, resulting in a substantial increase in funding to carry out research in this field and the enactment of standards, practices and procedures by which to implement preservation techniques in libraries throughout the country.³

The Scientific Library of Tomsk State University, opened in 1888, is one of the largest university libraries in Siberia and the Far East. It is considered to be the 'book treasure trove of Siberia'. The library is unique in content and has more than 3.8 million publications in storage, of which more than 118,000 are rare books and manuscripts. Many publications are of Russian and Western European origin, having not only federal or regional, but also global significance.

In addition to environmental deficiencies in storage that led to decomposition of the library collections, frequent use by students, researchers and other users of the library also exacerbated the issue of poor preservation via mechanical, physical-chemical and biological contributors. The leading contributor to physical document destruction was an antiquated heating, ventilation, and air-conditioning (HVAC) system, which led to poor ventilation, high levels of dust and fungi infestation.

In 2004, specialists from the Federal Library Conservation Center of the Russian National Library (St. Petersburg) evaluated storage conditions at the Tomsk library and determined that the library air quality was 5–7 times beyond tolerable limits for dust, 2–5 times above limits for destructive microorganisms in the air and as much as 7 times above tolerable limits of microorganisms on the surface of library collections.

The extent of the problem was so significant that a complete re-evaluation of the approach to storage conditions was required. This approach was documented in the Strategic Preservation Plan of the Scientific Library and included remediation steps to not only implement a digitization initiative of physical collections but also, and most importantly, improve storage conditions of original documents. More specifically, the plan included the following objectives:⁴

1. Develop measurements and monitoring practices of storage facility. Address lack of

appropriate measurement of facility conditions and implement regular and frequent monitoring of environmental and microbiological conditions of storage facilities with additional oversight over rare collections. This included the development of relevant measurements from both a qualitative and quantitative perspective of temperature, humidity and air quality in terms of dust and microbiological agents.

2. Improve conditions at storage facilities and adopt better methods of storage, preservation and restoration based on research conducted by the Scientific Library.
3. Initiate a document digitization program to scan collections and allow access to electronic versions of documents via the library website (<http://www.lib.tsu.ru>).

Essential to the Plan is that it captures the entire lifecycle of document preservation including document arrival and receipt, storage, maintenance and access or usage.

Achieving these objectives required close collaboration of several departments within the library, including administration, engineer services, the Regional Center of Conservation of Documents (RCCD), the Department of Main Holdings (DMH), the Department of Manuscripts and Rare Books (DMRB), specialists in microbiology and members of the university.

Develop measurements and monitoring practices of storage facility

Participants included:

- Members of RCCD, including a specialist in microbiology, who were responsible to develop procedures to conduct inspections,⁵ educate assistants of DMH and DMRB, prioritize activities including processing and analyze statistical data.
- Assistants of DMH and DMRB who were responsible for the physical inspection.

Monitoring of the microbiological conditions of the library collection and storage premises

Objectives:

- Assess microbiological conditions of rare books and manuscripts before and after disinfection.
- Provide an account of documents with biological damage.

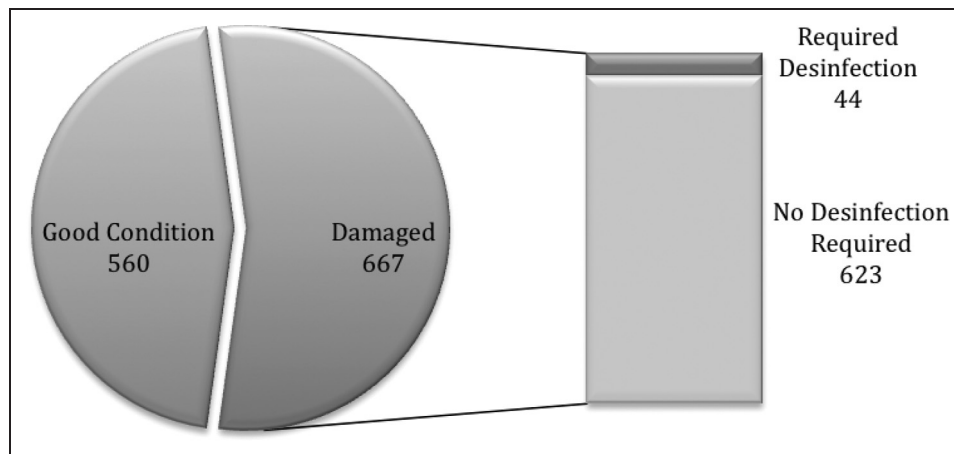


Figure 1. Highlights the results of microbiological inspection of the manuscript collections.

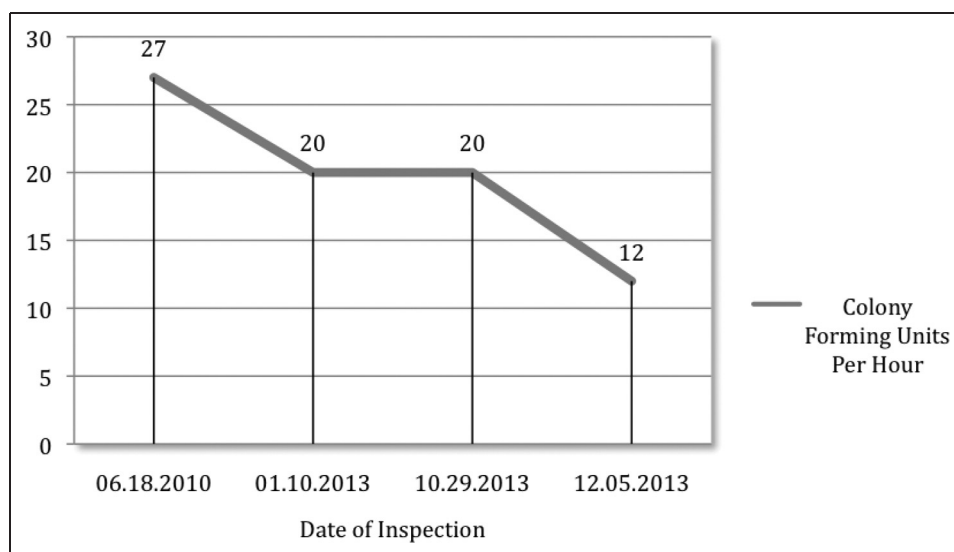


Figure 2. Depicts the results of plenum inspection.

- Lower impact of aqueous biocide on documents.
- Identify the extent of microbiological infestation in rooms including DMH and DMRB archives, the Scientific Library Museum of the Book and ventilation chambers.

Methodology. The total amount of microorganisms was defined by the sedimentative method. The inspection of collections and selection of books is performed throughout the year while inspection of storage rooms is conducted four times a year.

Results. Results of this analysis revealed microbiological conditions in collections and storage facilities, including air quality, amount of microorganisms in the air, the degree of biological damage in walls (plaster and paint coating) and types of fungi, along

with the detrimental impact of fungi to books and library employees.

Of the 1227 manuscripts inspected, 560 items were in good condition. However, 667 were affected by microorganisms, including 44 containing active microorganisms. These manuscripts were immediately disinfected. The remaining 623 items had no activity and were sent for phase conservation with a plan to monitor their condition going forward. As a result, we avoided treating these 623 documents with aqueous biocide.

Results from a 2010 microbiological inspection of plenums found a significant excess of microorganisms, i.e. colony forming units (CFU). Twenty-seven CFUs were found in the air. To reduce the excess micromycetes, filters were installed in plenums and are replaced on an annual basis. In addition, tiles were installed on floors, walls and ceilings to improve the sanitary conditions. As a result of these



Figure 3. Illustrates the inspection results of DMRB documents inspection by method of conservation.⁶

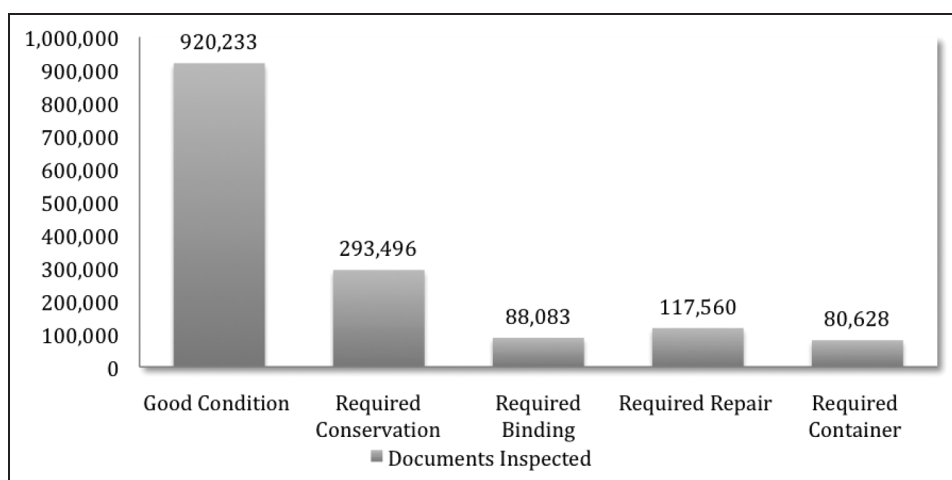


Figure 4. Illustrates the inspection results of DMF documents inspection.

actions, from 2010–2013 there was steady improvement in conditions due to reduced microorganisms in plenums.

The Scientific Library is currently conducting research by utilizing nanotechnology to determine how effectively different types of biocides influence certain microorganisms. Preliminary results have been obtained but the work is still in progress.

Monitoring of the physical condition (qualitative and quantitative estimation of document condition)

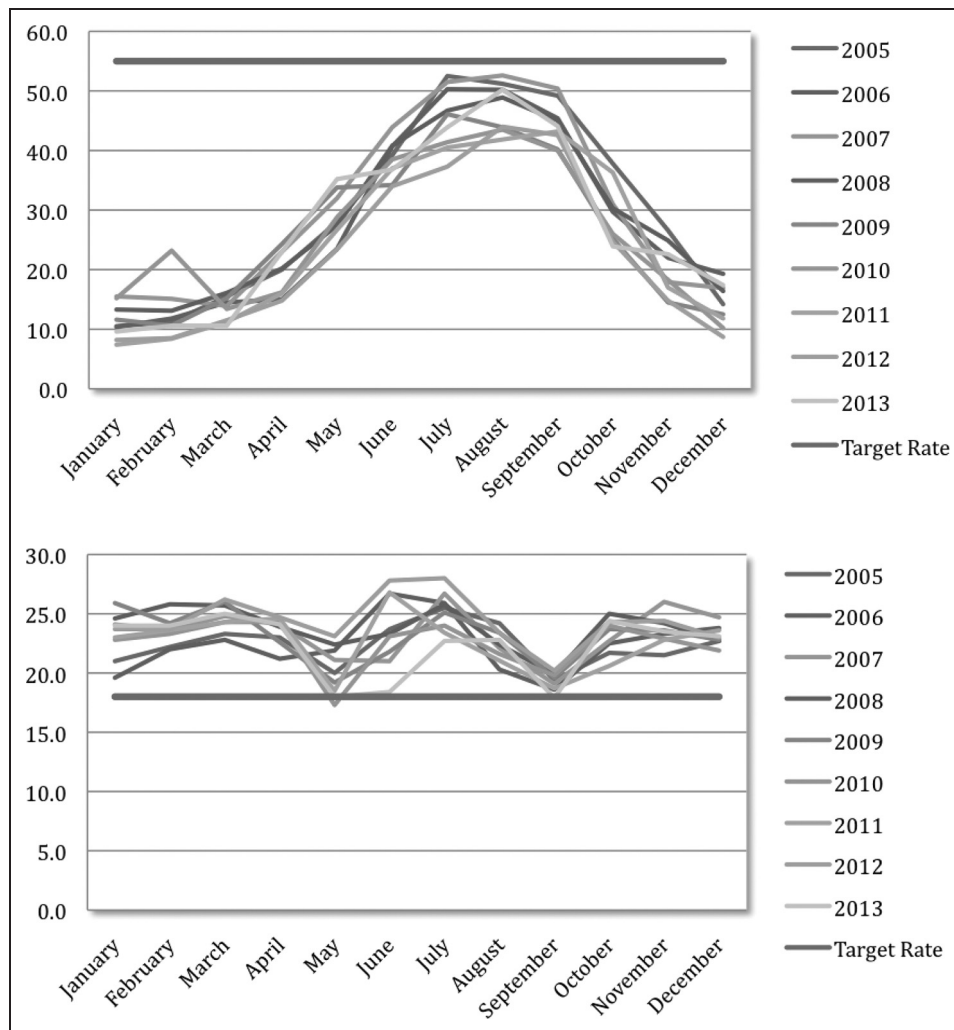
Objective: The purpose of this activity is to gather the following information:

- General condition of library collections (percentage ratio).
- Quantity of documents in need of conservation.
- Types and extent of damage.

- Determine the order of conservation activities (repair, binding, restoration, disinfection and phase preservation).

Location. Archives of DMH and DMRB.

Methodology. Physical inspection of all documents and rare books with an inspection ratio of 1 to 20 for the main library book collection. During the inspection process, specialists visually estimated the physical integrity of book components: book cover, book block and binding connections to book block. Specialists then noted the type and degree of deterioration (mechanical, physical-chemical, biological) and determined the most appropriate method and order of conservation. For each document inspected, information related to physical condition was written into each book's documentation, i.e. book passports. In



Figures 5 and 6. Show the results of the measurements for the period 2005–2013.

addition, the condition of all library collections (by floor in some circumstances) was recorded, based on the statistical sampling of the documents inspected.

Results. The results of the sampled population that was physically inspected represented the entire population of documents containing 5000 pcs. from DMRB and ~1,500,000 pcs. from DMH, including Slavic-Russian manuscripts (1034 pcs.), foreign manuscripts (193 pcs.), old printed books (820 pcs.), the early Western-European collection (2713 pcs.) and a small number of graphic collections.

Monitoring of temperature and humidity conditions

Objective: The purpose of monitoring is to track the changes of climate parameters during the year and to compare these parameters to statutory requirements.

Location. Archives of DMF and DMRB.

Methodology. Temperature and humidity measurements were taken by the following equipment: BONECO 7054, TESTO 605-H1, TKA-chranitel at specific locations. Conservators took measures of temperature and air-humidity each day and documented test values. Each month an assistant of RCCD collected data for analysis.

Results. After statistical data processing, conclusions were derived for each building and floor.

The results of monitoring storage climatic conditions for the period 2005–2013 revealed continued poor conditions in the surveyed areas. This situation was caused by the lack of funding for the reconstruction of obsolete environmental systems. Annual humidity levels in the library were significantly below target rate of 55 percent, while temperature was above target level of 18°C. In addition, dry winter climate

led to over-drying of documents, which decreases linear dimensions of materials, deformation and destruction of documents.

Improve conditions at storage facilities and adopt better methods of storage, preservation and restoration

Since 2010 there has been a differentiated approach to the preservation of library collections and rare books. One of the objectives of the Scientific Library is to improve the utilization of research results to develop more effective preservation techniques, as theory does not always translate into effective practice. The changes were aimed at improving operational efficiency in preventative conservation and the need to establish control of the overall microbiological condition of documents before and after the disinfection process. Efforts also aimed to better organize operational coordination of DMRB custodians, restorers, a microbiologist and a disinfector to improve the management of the library collection. Procedures were developed to maintain a database of DMRB documents, including information about microbiological and physical condition as well as any conservation and restoration activities that have taken place. This database is instrumental in facilitating the work of restorers in the accounting, control and analysis areas. In addition, data from monitoring is used in the library to conduct a comprehensive analysis to identify problem areas and the quality of the storage facility. This enables us to objectively assess the condition of the collection while also providing an opportunity to identify priorities and develop current and strategic plans. We can also focus on operational activities needed to address existing deficiencies.

Based on our research and data analysis, we implemented changes associated with disinfection, phase preservation of documents and restoration. Disinfection of rare books is now included as a part of the pre-restoration phase. Disinfection of documents, including new documentation procedures known as 'the restoration passport', is now approved by the Restoration Committee and required to be completed by disinfection staff. The biocide solution Metatin GT is used for disinfection of damaged documents. Document treatment is performed based on the results of the microbiological analysis for specific parts of the book recommended by the biologist.

Control processes to ensure no recurrence of infection of treated documents are now conducted every quarter (sampling). Mandatory labeling of microclimate containers was implemented for documents after disinfection. Labels included inventory document

number, date of treatment, type of the biocide, percentage of dilution, and name of the individual who conducted the disinfection.

Phase preservation of documents is now conducted manually by staff from the RCCD, DMH, DMRB and independent contractors. Phase storage of documents in microclimate containers was introduced as a new method of phase preservation for rare manuscripts, dilapidated books, graphic works, decrepit documents and documents that were treated and restored.

Restoration practices have existed in the Scientific Library of TSU since 1988. In 2013, within the federal program 'Culture of Russia', the Regional Center of Rare Book Conservation was created. Financing from the program provided the Regional Center with an opportunity to focus on the education of professionals in the restoration and fine arts fields. Employees of the Regional Center now perform their work at a higher professional level, applying modern and sophisticated restoration, stabilization and conservation methods.

Initiate a document digitization program to scan collections and allow access to electronic versions of documents via the Internet

Since 2000, the collection at the Scientific Library of TSU has been digitized in order to create full-text electronic versions. Digitization is performed using special scanning equipment including SMA 1 6650 in A1 printing format and Kirtas ART BookScan 1200 scanner.

Rare documents, depending on their physical condition, are fully or partially restored before being digitized. Then, they are scanned in the Electronic Library Department in order to provide back-up and accessible digital copies for users. Access to digital versions of these documents can be found on the library website (<http://www.lib.tsu.ru>). In addition, originals are stored in microclimate containers and are not accessible by readers.

Conclusion

In order to improve the processes and procedures for restoration and conservation, we applied a systematic approach consisting of the following objectives: develop measurements and monitoring practices of the storage facility, improve conditions at storage facilities and adopt better methods of storage, preservation and restoration, and preserve collections digitally. However, there are still very difficult problems including insufficient financing that will prevent continuation and refinement of the program.

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Notes

1. Adcock E (1999) IFLA principles for the care and handling of library material. *International Preservation Issues*. Numéro 3. Available at: <http://archive.ifla.org/VI/4/news/pchlm-f.pdf> (accessed 7 January 2014).
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3. The main strategies of library funds conservation in Russian Federation. 2011–2020 years. [Osnovnye napravleniya razvitiya deyatel'nosti po sokhraneniyu biblioteknykh fondov v Rossyskoy Federatsii na 2011–2020 gody] Available at: <http://mkrf.ru/proekty/detail.php?ID=249771&print=Y&print=Y> (accessed 25 January 2014).
4. This article describes general approaches and does not include detailed descriptions of methods and monitoring results.
5. Manernova OV (2011) Methods' inspection of the book fund. [Metodika obsledovaniya knizhnogo fonda] Research Library in the University system [Nauchnaya biblioteka v sisteme universiteta]. Tomsk, pp. 83–89.
6. Some books require several types of conservation methods.



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Scholarly productivity of Arab librarians in Library and Information Science journals from 1981 to 2010: An analytical study

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Abstract

Several studies discussed the characteristics of authors who published in Library and Information Science journals. Although none focused specifically on Arab librarians as authors, the current study attempts to reveal the scholarly contributions to library literature by Arab librarians. The study describes and analyses the journal research publications in Library and Information Science journals by professional librarians from 1981 to 2010. Single-author articles are found to be highly followed by two and three authored articles. The average degree of collaboration between authors in Library and Information Science journals is 9.64% (only 19 journal articles written by at least two or three authors). Finally, this study provides recommendations to Arab librarians to encourage them to be engaged in research in the Library and Information Science discipline.

Keywords

Arab librarians, scholarly communication, librarianship, scholarly productivity, Library and Information Science journals

Introduction

It is important for any discipline to investigate the patterns of its publications and to learn about contributions of its members. In this context, there have been many studies that focused on scholarly productivity in several disciplines using bibliometric indicators based on citation analysis, author productivity, and scholarly collaboration. While there have been numerous studies of professional librarians as scholars or researchers, specifically in the United States, for 30 years, little is known of the scholarly contribution by librarians in the Arab world. In fact, the author searched Library and Information Science (LIS) databases, but he could not find any papers on scholarly productivity of professional librarians in Arab countries who published scientific articles specifically in LIS scholarly journals. Based on the lack of such research, this study sought to establish and compare the research, publication patterns and outputs of librarians in the Arab world from 1981 to 2010.

In terms of scholarly productivity of professional librarians, some people may believe that the role of a *librarian* is confined to shelving and checking out books, processing information resources in the library, and providing information services to users. Moreover, some scholars such as Sitienei and Ocholla believe that librarians are not responsible for doing research or publishing. Publishing has not been a part of academic librarians' resumes (Sitienei and Ocholla, 2010). Thus, they cannot imagine that a librarian can conduct research or be a practitioner-researcher, as well. In fact, one of the most important factors that may help a librarian to succeed in his/her professional life is to participate in scholarly communication and to be a librarian-author or a scholar-practitioner. This idea was confirmed by Verzosa

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(2007) who believes that it is important for librarians to be engaged in scholarly activities that have value to librarianship.

In terms of publishing on the web, Stover (1996) contended that it is important for librarians to be involved in publishing in order to support the scholarly communication process. Gregory (2005) also suggested that academic librarians would also benefit from doing research because it allows them to maintain their faculty status or push for promotions in the future.

In contrast, Boice et al. (1987) argue that librarians are of great importance to the library literature. Librarians report that they have little time to devote to the activity; however, academic librarians presented many scholarly contributions to LIS literature each year.

It seems that there is more interest in scholarly communication between the professional librarians in developed countries. Therefore, we can interpret the notable contribution in LIS literature by those who work in academic libraries, especially in US. Zemon and Bahr confirmed (1998) that there was considerable interest in promoting publication by college librarians during the previous several years.

In 1992, the College Library Section (CLS) of the ACRL established a committee to encourage college librarians to do research and to publish. The committee hosted roundtable discussions at national ACRL conferences and published *InPrint: Publishing Opportunities for College Librarians* by Livingston (1997). *InPrint* is a guide to journals that are potential publishers for college librarians.

Again, for the LIS field in the Arab world, no accepted study has previously been conducted to determine contributions by professional librarians who published scientific articles specifically in its scholarly journals. Based on that, this study sought to establish and compare the research, publication patterns and output of academic librarians in the Arab world from 1981 to 2010, as will be mentioned later in the methodology section. The author thinks that the current study will serve as a baseline of research productivity for the profession of librarianship in the Arab world.

Literature review

The researcher found that most of the literature related to contributions by librarians was produced by US researchers as mentioned before. The researcher also noted that there were some studies that used a survey approach, depending on questionnaires, in order to

investigate the contributions by academic or college librarians. Other studies depended on the analysis of a selected sample of scholarly journals in LIS to reveal the productivity of librarians. Moreover, only few studies have depended on personal interviews with librarians themselves in order to get information about their contributions to research in LIS. Thus, this review will attempt to follow and cover the most important studies conducted in the field of scholarly productivity by librarians in LIS journals as whole.

In general, there are two categories of studies related to the literature of authorship in LIS: journal-based analysis and individual-based analysis. *Journal-based studies* focus on the characteristics of authors in one journal or in a group of related journals. In contrast, *individual-based studies* are concerned with the publication habits of a defined population of librarians or information scientists (Nisonger, 1996).

Krausse and Sieburth conducted a study based on articles in 12 LIS journals during the period 1973–1982. They found that librarian-authors who work in libraries with holdings of one or more million volumes might publish more articles compared with those who work in small libraries, and found that academic librarians wrote 42.3% of the articles in the 12 journals they analysed (Krausse and Sieburth, 1985). The same year, Watson attempted to document the affiliation of authors of articles published in journals in LIS during the period 1979 through 1983. Watson (1985) also found that 44.2% of authors were academic librarians, and 22.9% LIS were faculty staff and students, and that academic librarians authored 44.2% of the articles in 11 journals in the field of librarianship. The researcher thinks that Watson's study published in 1985 was the first attempt that reflected the nature of literature patterns by academic librarians.

In the light of this idea, Budd and Seavey investigated 36 LIS journals during the period 1983–1987. They concluded that larger university libraries contributed the most productive authors (Budd and Seavey, 1990). In another study, Zemon and Bahr suggested that more authors from large university libraries and fewer from college libraries contribute to the library literature. The authors examined the articles published by college librarians in *Journal of Academic Librarianship* and *College & Research Libraries* and found that about 60% of the articles were written by authors from large libraries (Zemon and Bahr, 1998).

Joswick conducted an individual-based study in order to investigate the journal article publication characteristics of academic librarians in the state of

Illinois. He found that 63% of articles were written by single authors. Based on the results of his study, Joswick (1999) confirmed that collaborative authorship continues to grow, especially among women authors, in the state of Illinois. In a similar study, Weller et al. (1999) examined the contributions to the peer-reviewed literature of LIS by US academic librarians. They analyzed the articles published from 1993 to 1997 in 32 journals and found that 43.6% of articles were authored by at least one academic librarian as a pattern of single authorship.

In terms of gender productivity in LIS literature, Håkanson analysed three scholarly core journals of LIS with respect to gender of article authors and gender of authors cited in these articles. The share of female contributors to these journals had certainly increased during the studied period from 1980 to 2000 (Håkanson, 2005).

Hildreth and Aytac studied a sample of 204 articles of LIS journals between 2003 and 2005 and found that 47.1% of the articles were written by practitioner-researchers (librarians) alone, 43.2% by academics ('academic-researchers' who teach in schools of LIS), and 9.71% by mixed research teams (Hildreth and Aytac, 2007). Soutter (2007) used another method in order to describe the literature of academic librarians in his study. He depended on searching some specialized databases (like ERIC, LISA, LISTA, and LIBLIT) for gathering data about peer-reviewed articles from 2001 to 2005. He noted that most articles were written by single authors and by authors associated with academic libraries or library schools. The majority of articles on education and continuing professional development were written by authors at school libraries.

Personal interviews were a different methodology introduced by Fennewald in order to allow librarians to describe their motivations to engage in research: what programs, experiences, or support they have found useful; and, what hindrances they have faced. Librarians at the Pennsylvania State University were the population of Fennewald's study. He found that limited financial support was available to attend conferences and there was no formal policy on released time to conduct research (Fennewald, 2008).

Sitienei and Ocholla compared publication patterns of academic librarians in eastern and southern Africa. The results indicated that South Africa was the most productive country in terms of publications (Sitienei and Ocholla, 2010). The research visibility of university librarians in Eastern Africa from 2000 to 2009 was analysed by Ocholla et al. using informetric techniques. The authors found that the research visibility of academic librarians was insignificant and that most

academic librarians preferred individual publishing; and they also figured out that the most published authors came from Tanzania (Ocholla et al., 2012). In the same year, the authors also conducted another study reporting the publication patterns of university librarians in Southern Africa. The study confined its scope to publications produced within the previous 10 years (2002–2011) (Ocholla et al., 2012).

In a recent study, Kennedy and Brancolini (2012) reported on the results of a survey of academic librarians about their attitudes, involvement, and perceived capabilities using and engaging in primary research. The authors concluded that academic librarians were actively engaged in the research process. In terms of academic preparation, the participants confirmed that LIS Master's degree training adequately prepared them to read and understand research but it did not prepare them to conduct research. In another recent study, Harkema and Nelson (2013) discussed the role of librarians in scholarly environment, as the librarians make the published content findable and accessible to the researchers.

In general and on the level of the Arabic region, Bader (1999) analysed the scholarly productivity of Saudi Arabia and Egypt by using the King Abdul-Aziz city databases and ISI statistics in this context. The study revealed the leadership of Egypt among Arab and Islamic countries. Using SCOPUS database, Elgohary (2009) investigated the productivity of Arab scholars in five countries. The results indicated the leading position of Egypt among other countries in many of the subject fields. However, his study did not address the productivity of Arab librarians in LIS literature.

Regarding the studies of Arabic journals in LIS, the author found more articles focused on many aspects of the study such as evaluating the electronic Arabic journals in LIS (Eddakrouri, 2007), analysis of the methodologies used in LIS articles by authors (Al-Gendy, 2012; Amody and Gohary, 2009), and content analysis of LIS articles (Abd Al-Hady, 2012). In addition, Ismail (2002) analysed the contributions of Arab researchers in LIS based on the data driven from LISA, ISA, and Eric databases. The study revealed the dominance of the English language for the published papers. However, it did not address the Arab librarians as authors.

In all, the present literature review showed that no studies were undertaken on authorship patterns by Arab librarians in LIS journals before, and, therefore, there is a need for conducting such a study to describe the situation of Arab librarians as authors or practitioner-researchers.

Table 1. Core list of refereed Arabic journals in LIS.

No.	Title of journal	Time period	No. of issues
1	<i>Arab Journal for Librarianship and Information Science (AJLIS)</i>	1981–2010	120
2	<i>New Trends In Libraries and Information (NTLI)</i>	1994–2010	34
3	<i>Arabic Studies In Librarianship and Information Science (ASLIS)</i>	1996–2010	45
4	<i>AL-FIHRIST</i> ¹	2003–2010	32
5	<i>Cybrarians Journal</i>	2004–2010	32
6	<i>lalam</i> ²	2007–2010	7
7	<i>Research in Library and Information Science (RLIS)</i>	2008–2010	5
8	<i>Information Studies</i>	2008–2010	9

Methodology

Publications by practitioners or professional librarians may be more important for the literature of LIS because librarians themselves come from an environment that values research and publication and seeks to support researchers in any disciplines in order to find what they want. Thus, the present study sought to describe the contributions of Arab librarians to LIS literature and to answer the following questions:

1. To which extent do Arab librarians contribute to the LIS literature?
2. What is the frequency of sole authorship and co-authorship for Arab librarians?
3. In which subject areas do Arab librarians publish?

Selection of Arabic refereed LIS journals

The present study is a journal-based study investigating the characteristics of journal articles that have been published by professional librarians in the Arab world. Eight refereed journals were chosen as samples for the analysis in the current study, because they are well-known and well-established Arabic journals in LIS for the Arab researchers at regional and local levels in addition to the important role they play in scholarly communication system; and, because they are open venues for both faculty members and librarians to participate in scientific activities. (See Table 1.) The time span selected for study started from the first issue for each journal from 1981 to 2010 so that the researcher could survey the nature of the Arabic journals in LIS for a long period of time. The period for this study started from 1981 because the *Arab Journal for Librarianship and Information Science (AJLIS)*, the first Arabic scholarly journal in LIS, began its publication in 1981.

Because journals studies contain a variety of other types of materials, this study excluded all editorials, introductions, letters to the editor, documentary reports, symposium and conference reports, book

reviews, dissertation reviews and translated articles from English to Arabic from the analysis. This study focused only on the peer-reviewed LIS journal articles published by Arab librarians (defined as any *librarian, information specialist, or documentation specialist*) as identified by each author's affiliation in each article.

Thus, the focus here will exclusively be on authors who are librarians and who published articles in the selected journals in the current study. It is important to explain that the results of the present study will hold only for the selected journals studied. Thus, one may imagine a more comprehensive result if another study were conducted that covered all categories of information resources in which librarians may publish their productions.

Data collection

Each issue of the selected sample of journals was inspected. Only full-length articles appearing in the journals studied, in Arabic or English language, are included in the study. Any article by even one librarian author was considered and counted as a librarian publication. Based on the main target of the study, the author analysed all issues of the sample journals in order to record the number of refereed articles and the number of authors of these articles specifically who were Arab librarians. The researcher also noted the librarian author's name and his/her institutional affiliation.

Limitations

One of the limitations of this study is the size of the sample. Because there are no updated statistics about the profession in the Arab world, the author found it difficult to determine the whole number of professional librarians who work in libraries in the Arab countries in order to calculate the percentage of their contributions compared with all librarians in the region.

Table 2. Librarian contributions to refereed articles in journals studied.

No.	Journal	Total articles	Articles by librarians
1	<i>Arab Journal for Librarianship and Information Science (AJLIS)</i>	690	72
2	<i>Cybrarians Journal</i>	143	53
3	<i>New Trends In Libraries and Information (NTLI)</i>	277	34
4	<i>Arabic Studies In Librarianship and Information Science (ASLIS)</i>	187	20
5	<i>AL-FIHRIST</i>	83	14
6	<i>Information Studies</i>	65	3
7	<i>lalam</i>	51	1
8	<i>Research in Library and Information Science (RLIS)</i>	30	0
		1526	197

Table 3. Publication output per author.

No. of publications per author	No. of authors	% of author in study	% of men authors	% of women authors
1	78	66.67	53.85	12.83
2	18	15.39	13.68	1.71
3	9	7.69	6.84	0.85
4	6	5.13	4.27	0.85
5	0	0.0	0.0	0.0
6	1	0.85	0.0	0.85
7	1	0.85	0.85	0.0
8	3	2.56	2.56	0.0
9	1	0.85	0.85	0.0
Total	117	99.99	82.9	17.09

Results

The journals' productivity

In this section, results from the data analysis are presented. During the time frame of the current study, the eight Arabic journals published 284 issues, with 1,526 peer-reviewed articles written by faculty authors in LIS departments, professional librarians, post-graduate students and others. Only *Research in Library and Information Science (RLIS)* published 13 refereed articles written only by faculty members in LIS departments during the selected period (2008–2010).

The study identified 197 articles (or 12.9% of all articles) as authored by 117 different Arab professional librarians during the period of the study. The average number of articles published per author during the period was 1.68. Articles authored by librarians were not distributed equally among all the sample journals; the percentage of articles authored by at least one Arab librarian was from 0.0% (for *Research in Library and Information Science*) to 36.55% (for *Arab Journal for Librarianship and Information Science*). (See Table 2.)

The authors' productivity

Table 3 reflects the breakdown of numbers of contributions per author. As shown in this table, the absolute majority of librarians (66.67%) published only one article during the time frame of the study. The highest number of refereed articles for one author was nine. Arab librarians who published two or more articles comprised 33.33% of all those who published.

Authorship patterns

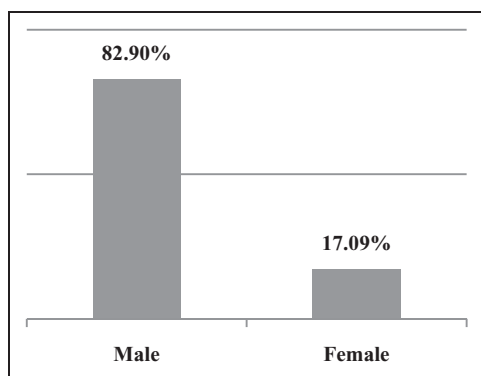
The authorship patterns were analysed to reveal the percentage of single and multiple authors. As shown in Table 4, it is noted that single authored contributions have dominated the journals sampled in the study. Of these 178 (90.35%) articles were written by only one author.

Authors by gender

Of the authors 97 (82.9%) were male, and 20 (17.09%) were female. These figures indicate that men published more than women in the LIS profession in the Arab world. But when comparing these

Table 4. Productivity of Arab librarians in LIS journals from 1981 to 2010.

No. of authors	No. of articles	Percentage
1	178	90.35
2	17	8.63
3	2	1.01
Total	197	99.99

**Figure 1.** Authors by gender.

results with the gender distribution of professional librarians in another regions, one can notice a big difference between Arab librarians in terms of scholarly productivity.

Depending on authorship characteristics in *College & Research Libraries*, Terry (1996) attempted to design a useful chart in order to illustrate the rise in the percentage of female authorship in that journal from a low of 13% in the late 1950s to a high of 51.7% for the period between 1989 and 1994. Joswick (1999) analysed article publication patterns of Illinois academic librarians and found that 59.64% of the authors sampled were female, and only 39.75% were male. His study concluded that women in Illinois academic libraries were making a significant contribution to scholarship compared with men. Håkanson (2005) found that the share of female contributors to LIS journals had certainly increased during the studied period from 1980 to 2000 (Håkanson, 2005).

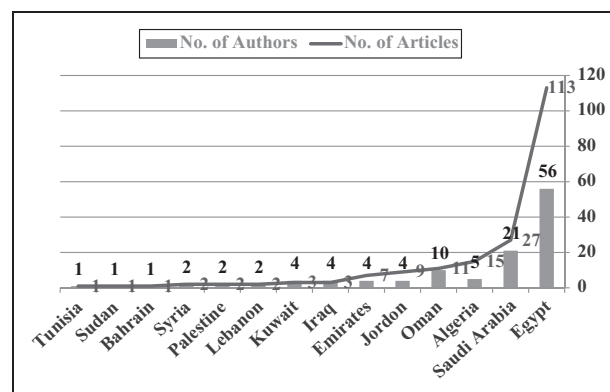
These results mean that the situation of foreign women in librarianship has changed from the past, but the Arab women as librarians still face more obstacles on different social levels. They may not find time to develop their research skills or to publish. However, this study revealed the contributions made by Arab women to LIS literature, although these were comparatively fewer than those by men. (See Figure 1.)

Authors by country

An attempt has been made to study the geographical distribution of contributions by Arab librarians.

Table 5. Most productive Arab countries (ranked by no. of articles).

Rank	Arab countries	No. of authors	No. of articles
1	Egypt	56	113
2	Saudi Arabia	21	27
3	Algeria	5	15
4	Oman	10	11
5	Jordan	4	9
6	Emirates	4	7
7	Iraq	4	3
8	Kuwait	4	3
9	Lebanon	2	2
10	Palestine	2	2
11	Syria	2	2
12	Bahrain	1	1
13	Sudan	1	1
14	Tunisia	1	1
Total		117	197

**Figure 2.** Most Productive Arab Countries (Ranked by No. of Articles).

(See Table 5.) Of the 117 librarians, 56 were from Egypt and they published 113 articles (57.36%). The 21 librarians from Saudi Arabia published 27 articles (13.70%). Only five authors were from Algeria and they published 15 articles (7.6%). Other Arab countries were less represented; only four authors each were from Jordan, United Arab Emirates, Iraq, and Kuwait. It is noted that there was no scholarly contribution from the rest of the Arab countries specifically Libya, Qatar, Morocco, and Yemen; and there was a small percentage of all the professional librarians in some Arab countries such as Bahrain, Sudan, and Tunisia.

Authors' affiliations

The researcher attempted to sort the data set by the authors' institutional affiliations in order to produce a ranked list of the total author count per institution.

Table 6. Most productive institutions in the Arab world (ranked by no. of articles).

Rank	Institution	Country	No. of authors	No. of articles
1	American University in Cairo (AUC)	Egypt	7	20
2	Miser Public Library (MPL)	Egypt	9	12
3	King Saud University (KSU)	Saudi Arabia	4	11
4	Sultan Qaboos University (SQU)	Oman	7	10
5	Egyptian National Library and Archives (ENLA)	Egypt	5	6
6	Juma Almajid Heritage & Culture Center (JAHCC)	Emirates	3	6
7	Al Ahrum Organization & Information Technology Center (AOITC)	Egypt	2	6
8	Université d'Oum El Bouaghi	Algeria	1	6
10	King Fahd University of Petroleum and Minerals (KFUPM)	Saudi Arabia	7	5
11	Cairo University	Egypt	2	5
12	King Abdul-Aziz University (KAU)	Saudi Arabia	3	4
13	King Fahd National Library (KFNL)	Saudi Arabia	3	4
14	Umm Elqora University	Saudi Arabia	2	4
15	Yarmouk Univ.	Jordan	2	4
16	Helwan Univ.	Egypt	2	3
17	Naseej, Arabian Advanced Systems	Saudi Arabia	2	3
18	Al- Mosel Univ.	Iraq	2	1
	Other institutions	–	54	87
			117	197

Table 7. Article subject coverage.

Subject area	Total	Percentage
Librarianship	39	19.8
Information Technology	38	19.29
Technical Services	34	17.26
Information Services	30	15.22
Information Resources	23	11.67
Other	21	10.66
Library Administration	12	6.09
	197	99.99

It is worth noting that most of the institutions in Table 6 are large university libraries. In other words, most of the authors of 73 articles (or 37%) are affiliated with academic institutions.

As mentioned before, the librarians who work in large libraries may publish more articles compared with those who work in small libraries. Based on that, the table illustrates that of the 117 librarians, seven were from the American University in Cairo (AUC), who published 20 journal articles. As can be seen from Table 6, about 54 (46.15%) authors affiliate to a variety of institutions in the Arab world.

Authors' subject coverage

The study identified six subject categories of the publications by Arab librarians as mentioned in Table 7. It is worth noting that *Librarianship* was the most

researched subject (19.8%), followed by *Information Technology* (19.29%), and *Technical Services* (17.26%). Only 6.09% of articles by librarians were on *Library Administration*.

Discussion

The main target of the current study is to reveal the scholarly contributions of Arab librarians in a selected sample of LIS journals from 1981 to 2010. The author noticed that Arab librarians are not publishing their works in some journals especially *Research in Library and Information Science* (RLIS) because of the fees they must pay for the publishing process and the journal itself is orientated for promotion purposes to faculty members in LIS in the Arab world.

The results of this study showed that Arab librarians authored only 12.9% of all articles published in the sample journals. Based on this result, the author can conclude that the situation of Arab librarians as authors may differ more from other librarians in previous studies. Krausse and Sieburth (1985) found that academic librarians wrote 42.3% of the articles in the 12 journals they analysed. Watson (1985) found that academic librarians authored 44.2% of the articles in 11 journals in the field of librarianship. Weller et al. (1999) noticed that only 43.6% of articles were written by at least one US academic librarian author. In general, it is important to recognize that the proportion of articles published by librarians is low (only 12.9% as mentioned above) compared to the proportion of whole materials (about 87.1%) published in

the sampled journals by faculty members, post-graduate students and unidentified authors.

Regarding the authorship patterns, the study showed that 90.35% of articles were written by only one author. This result can confirm the situation of single authorship phenomenon among Arab librarians as authors. Despite the importance of research collaboration in any scholarly society, the author found that only 19 (9.64%) articles were written by at least two or three authors. One may conclude, then, that the contributions of single authors are more prolific than those of collaborative authors.

The author observed that Egypt was the more prolific country in the region in terms of the authors' productivity and the number of their publications because it has LIS educational systems that started in 1951 when the department of Library, Archives and Information Technology was established at Cairo University as the first LIS department in the Arab region. In addition, Egyptian universities have more than 19 LIS academic departments for both undergraduate and postgraduate education.

In terms of the countries' productivity, the study confirmed that some Arab countries were less represented especially Jordan, United Arab Emirates, Iraq, and Kuwait. On the other hand, there is no scholarly contribution from the other countries, specifically Libya, Qatar, Morocco, and Yemen. The author suggests that the librarians of those countries may publish in other scholarly channels such as conference proceedings, books or non-peer-reviewed journals. Moreover, there are some authors who still prefer to publish in Arabic as a native language in spite of the dominance of English as an international language of science.

Also, it may be surprising to know another reason that probably affects the publication performance of some African countries in this context. This cause is related to diaspora that is prevalent in the African countries. Sitienei and Ocholla focused on the issue of diaspora as a factor of decreasing of scholarly contributions by some African countries, 'whereby many intellectuals migrate to other countries because of push factors such as unemployment, poor remuneration, no academic freedom or freedom of expression, and poor government policies. This affects many professions, including Library and Information Science' (Sitienei and Ocholla, 2010: 40).

The author noted that Arab librarians published more in both *Librarianship* and *Information Technology* because the period covered by the current study witnessed an interesting conversion in library administration systems from traditional to automated library systems in most Arab countries.

Conclusion

According to Swigger's view when he described LIS as 'essentially a practical one – an applied rather than a theoretical science – it makes sense to expect the practitioners to produce research' (Swigger, 1985: 108), the current study attempted to evaluate the contributions of Arab librarians to LIS literature. The study identified 117 Arab librarians who published 197 (12.9%) articles in eight LIS journals for the period between 1981 and 2010, compared to the results of the related studies in this context. Of these, 178 (90.35%) articles were written by only one author. In average, one librarian author published 0.59 refereed articles. In regard to the authors' affiliations, the study produced a list of the most productive libraries with the highest number of published articles. The study suggests that it will be more important to conduct a further investigation in order to reveal the role of Arab institutions in supporting the research and publications of professional librarians.

Based on the results of the current study, the proportion of contributions of Arab librarians to the LIS literature seems weak. Although academic writing is one of the most important activities academicians can do, the study suggests that it is also important for those who are working as practitioners and dealing with reality closely. For librarians as professionals, academic writing can provide an important kind of self-education, as Orne argues:

I would urge you to write, not because it is a good thing, not because it is nice to see your name in print, not even because it is relevant to full membership in our society, but rather because you will really get to know a field only if you contribute to it. (Orne, 1981: 4).

Recommendations

In terms of scholarly communication, the study recommends librarians to participate in regional and international conferences because attendance at those conferences is a requirement for the career advancement of many librarians, particularly those who work in colleges or universities. Moving from simple attendance to poster session or to paper presentation is viewed as the natural progression for the professional development of an academic librarian (Vega and Connell, 2007).

For further research, it will be useful to conduct an investigation in order to reveal the librarians' contributions to the non-peer-reviewed literature such as monographs, books, and general magazines. In addition, the author suggests further research to examine

the relationship between LIS education and LIS productivity in the Arab world.

The author thinks that it is important for Arab librarians to be aware of ongoing research and professional development through the following recommendations of the Canadian Academic Research Libraries CARL (2010: 9) for librarians:

- Research and publication – contributions through writing, editing, refereeing or reviewing of books, articles or reports.
- Conferences – contributions through presentations to professional or scholarly associations/meetings.
- Formal study –: taken to broaden subject or professional knowledge and may include study for advanced professional and/or related academic qualifications.
- Teaching – teaching courses in areas of librarianship, archives or other academic disciplines.
- Conference management – planning, organizing or conducting professional programs, workshops, seminars or conferences.
- Professional Associations – active participation in professional associations which may include holding executive office, serving on committees, etc.
- Active engagement in community initiatives – especially those associated with their area of professional or subject expertise.
- Staying informed – ability to stay abreast of research in a specific area to support a research agenda or to support other work as a librarian within the library.
- Research models and methods – knowledge of the fundamentals of qualitative and quantitative research methods including the research process (e.g. question formulation, peer review, etc.).
- Grant writing – knowledge and pursuit of avenues available for grants to facilitate research work.

It seems more important to conduct different studies focus on the following issues:

- motivations of Arab librarians to engaged in research;
- the role of academic universities in supporting Arab librarians to publish;
- the requirement for scholarship by librarians at Arabic universities;
- information-seeking behaviors by Arab librarians as a researchers;

- why many librarians do not publish and;
- what are the problems faced by librarians who publish?

At the end of this study, the author recommends Arab librarians to engage in research and to publish regularly. Doing research and publishing are not only criteria for the promotion of professional library staff, but will also garner and strengthen their professional and research recognition in the academic community.

Notes

1. *AL-FIHRIST* is a Scholarly Refereed Journal published by the Bibliographic Services Center, National Library and Archives in Cairo, Egypt.
2. *Ialam* (means Learn or Know) is a scholarly refereed journal published by the Arab Federation for Libraries and Information (AFLI) in collaboration with King Abdul Aziz Public Library in Riyadh, Saudi Arabia.

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Abstracts

قتطفات

Academic libraries: A soft analysis, a warning and the road ahead

المكتبات الأكاديمية: تحليل وتحذير واستكشاف طريق المستقبل

James M. Matarazzo, Toby Pearlstein

العدد رقم 41،1 من مجلة الإفلا المُتخصصة: 12-5

لقد أعادت الشبكات التي تُتيح قواعد بيانات النصوص الكاملة، عملية البحث في المكتبات الأكاديمية والمُشتركة، وقد شعرت بيئة المؤسسات الربحية بهذا الأثر أسرع حيث تكون المكتبات أقل عزلة بحكم وضعها التاريخي والمؤسسي، وقد توضح التغيرات في المكتبات المُشتركة وجهودها للمكتبات الأكاديمية كيفية مواكبة التغيرات والحقائق الجديدة، وستحتاج المكتبات الأكاديمية إلى إستراتيجيات جديدة؛ للحفاظ على علاقتها مع الطلبة والجامعة والمجتمع الأكاديمي؛ لضمان استدامتها.

Expanding the Personal-Name-Authority-Record under RDA: Current status and quality considerations

التوسع في سجلات الأسماء المُقننة في الـRDA: الوضع الحالي واعتبارات الجودة:

Heather Lea Moulaison

العدد رقم 41،1 من مجلة الإفلا المُتخصصة: 24-13

إن الفرد كيان مُركب وبتزايد تعقيد عملية تمثيله في السجلات المكتبية تحت مظلة قواعد RDA، تتفحص دراسة الحالة صفات سجلات التقنين بمكتبات Merlin الأكاديمية في ستة أشهر (مثلاً: سبتمبر 2013) وستة (مثلاً: أبريل: 2014)، بعد انتهاج قواعد RDA رسمياً؛ لتقييم سمات كل مجال، وبعد عام من الفهرسة باستخدام قواعد RDA، تبحث هذه الدراسة مؤشر جودة إتمام عملية إدخال البيانات، وأظهر البحث عدم وجود أية سمات مُميزة على الإطلاق في 87.85% من سجلات التقنين، ولكن عدد المحتوى من السجلات قد زاد على مدار الستة أشهر الماضية، وبعد مرور عام أصبح لكل واحدة من 8% من السجلات سمة واحدة على الأقل تُميزها، و5% منها سمتين أو أكثر تُميزها.

Sharing science: The state of research institutional repositories in Ghana

مُشاركة العلوم: وضع المستودعات المؤسسية للمعلومات في غانا:

Jenny Bossaller, Kodjo Atiso

العدد رقم 41،1 من مجلة الإفلا المُتخصصة: 39-25

يستفيد العلماء حول العالم من مُشاركة البيانات العلمية والملاحظات العملية والأبحاث التمهيدية والأبحاث العلمية التقليدية والرسمية، والذي من شأنه خلق أشكال جديدة من التعاون والسماح للعلماء والدارسين بالتعاون في بناء قدراتهم، ولكن وطي يتم ذلك يجب أن يتفق العلماء في مدى أمان المستودع كما ينبغي أن يفهموا قوانين حقوق الطبع والنشر. تقف حالياً العديد من الأمم الأفريقية في مُفترق طرق: لحل مُشكلات كبرى بخطى واثقة على يد علماء مُدرّبين جيداً ولكن مازالت تواجههم مُشكلات تقنية غير متوقعة في تكنولوجيا المعلومات، كما يتوخى العديد من العلماء الأفارقة الحذر بسبب انتشار الغش والنصب على الإنترنت. توضح هذه الورقة البحثية الوضع الحالي لتطوير تكنولوجيا الاتصالات والمعلومات في أفريقيا وتشمل نتائج أبحاث حول تكنولوجيا الاتصالات والمعلومات وقواعد البيانات في غانا وتنتهي بتوصيات للتوسع في استخدام الـIRs.

The library in the research culture of the university: A case study of Victoria University Library

المكتبة وثقافة الجامعة البحثية: دراسة حالة من جامعة فيكتوريا:

Ralph Kiel, Frances O'Neil, Adrian Gallagher, Cindy Mohammed

العدد رقم 41،1 من مجلة الإفلا المُتخصصة: 52-40

يقدم هذا البحث دراسة حالة من مكتبة جامعة فيكتوريا كونها جامعة حديثة نسبياً، تُسهّم إلى تنمية ثقافة المؤسسة البحثية الناشئة، ويعرض مُختلف مشروعات ومبادرات التواصل العلمي مع التأكيد على المستودعات الرقمية ومحو الأمية الرقمية والأدوار الجديدة التي تقوم بها المكتبات، وقد تُساعد التحديات والنجاحات المذكورة المكتبات الأكاديمية المُماثلة في التخطيط لمبادرات ومشروعات من هذا النوع وتنفيذها.

The rural library's role in Ugandan secondary students' reading habits

دور المكتبة الريفية في عادات القراءة لطلاب الإعدادية في أوغندا:

Valeda Frances Dent, Geoffrey David Goodman

العدد رقم 41،1 من مجلة الإفلا المُتخصصة: 62-53

تُرکز هذه الدراسة مُختلطة وسائل البحث على أثر مكتبة القرية الريفية على طلاب المرحلة الثانوية، وتم تحليل البيانات الكمية؛ لاستكشاف أربعة من العوامل المرتبطة ببيئة الطلاب من مدرسة ومكتبة ومنزل، ونجد أن مكتبة Kitengesa في أوغندا توفر المكان المُناسب للدراسة، وقد تم اختيار هذه العوامل للدراسة؛ لأنها تُصور حياة الطلاب في هذه البيئة، وقد تم تناول الأسئلة والافتراضات ذات الصلة بها عن طريق المقارنة بين مجموعتين من الطلاب، مجموعة تستخدم المكتبة الريفية وأخرى لا تستخدمها.

Conservation of library collections: Research in library collections conservation and its practical application at the Scientific Library of Tomsk State University

حفظ المُقتنيات المكتبية: البحث في مجال حفظ المُقتنيات وتطبيقه عمليًا في مكتبة جامعة ولاية Tomsk العلمية:

Olga Manernova

العدد رقم 41،1 من مجلة الإفلا المُتخصصة: 69-63

لقد أدت القيود المفروضة على مجال حفظ المُقتنيات المكتبية إلى ضياع وتلف الكثير من الوثائق الهامة، منها كتب نادرة ومخطوطات، وهو ما لم يكن يتم تناوله بصورة كافية حتى فترة قريبة، فبالرغم من تطوير وتطبيق مناهج علمية للحفاظ بنجاح إلا أنها دائمًا ما واجهتها عوائق جوهرية خلال التطبيق العملي. تُعد مكتبة ولاية Tomsk واحدة من كبرى مكتبات روسيا، وتضم حوالي 3.8 مليون حاوية معلوماتية منها المخطوطات والكتب النادرة، ولكن تواجهها تحديات أساسية في عملية حفظ المُقتنيات وصياغة المؤلف منها في صور أخرى، وبالعلم أن "مركز كتب صربيا"

كان عُرضة للتدهور المُستمر بل والضياع التام في بعض الأحيان نتيجة بعض عوامل التفكك، فقد زادت السلطات الروسية تأكيدها على عملية الحفظ ورفعت تمويلها، ومه زيادة التركيز على الحفظ عاد المكتبيون إلى مناهج الحفظ والترميم، والتي منها مُتابعة أفضل لعمليات تخزين المُقتنيات ومراقبتها وإتباع مُمارسات أفضل. بالإضافة إلى ذلك، قام فريق العمل بتأسيس نسًا إلكترونية من مجموعة المكتبة؛ لتقليل استخدام النسخ الأصلية وبذلك نحد من إتلافها أكثر من ذلك. عن الهدف من هذا المقال هو توضيح تطبيق الحفظ والترميم عمليًا، من خلال نموذج مكتبة جامعة Tomsk العلمية؛ لإبراز نجاح مثل هذا المنهج المتطور. وبالرغم من اقتصر الظروف البيئية في هذا البحث على مكان واحد فحسب، يُفترض أن يُناسب هذا المنهج جهود الحفظ في أماكن أخرى وبنفس الفعالية في أماكن أخرى، ولكن يحتاج الأمر إلى تمويل إضافي حيث لا توجد الآن ميزانيات كافية والتي تُعد ضرورة لإتمام هذه المُمارسات المتطورة على أكمل وجه.

Scholarly productivity of Arab librarians in LIS journals from 1981 to 2010: An analytical study

ما قدمه المكتبيون العرب من إنتاج علمي إلى مجلات المكتبات والمعلومات منذ 1981 إلى 2010: دراسة تحليلية:

Mahmoud Sh. Zakaria

العدد رقم 41،1 من مجلة الإفلا المُتخصصة: 79-70

لقد تناولت العديد من الدراسات سمات المؤلفين الذين نشروا أبحاثهم في المجلات المُتخصصة للمكتبات والمعلومات، ولكن أيًا منها لم يُركز على المؤلفين من المكتبيين العرب، لذا تحاول هذه الدراسة الكشف عن إسهاماتهم العلمية للبحث في مجال المكتبات والمعلومات، وتصف وتحلل الإنتاج البحثي الذي نشره المكتبيون المُتخصصون من عام 1981 وحتى عام 2010، وقد كان أكثرها من المقالات ذات المؤلف الواحد تليها ذات المؤلفين أو الثلاثة، وتُمثل نسبة التعاون بين المؤلفين 9.64% (فقد كان عدد المقالات المُشتركة 19 فقط)، وفي النهاية تُقدم هذه الدراسة توصيات للمكتبيين العرب؛ تحثهم على مُشاركة أكبر في المجال البحثي.

摘要

Academic libraries: A soft analysis, a warning and the road ahead

学术图书馆：软分析、警示和未来之路

James M. Matarazzo, Toby Pearlstein

IFLA Journal, 41-1, 5-12

全文数据库的在线访问破坏了学术图书馆和企业图书馆同研究过程的关系。在追求利益的背景下，图书馆无法摆脱组织声望和历史传统的影响，因而愈加更为直接地受到了影响。企业图书馆的改变及其维持影响力所做的努力，可以为学术图书馆在如何经受住新环境上提供启示。学术图书馆需要新的策略来维系与学生、教师和学院的关系，以确保持续性发展。

Expanding the Personal-Name-Authority-Record under RDA: Current status and quality considerations

在RDA规则下扩展个人名称规范记录：现状及质量方面的考虑

Heather Lea Moulaison

IFLA Journal, 41-1, 13-24

在RDA规则下，通过增加属性，个人名称在图书馆规范记录的表征正变得越来越复杂。本个案研究采用历时性研究方法，探究了正式采用RDA规则评估属性字段后6个月(至2013年9月)和一年(至2014年4月)时Merlin学术图书馆集群规范记录里的属性。本研究调查了采用RDA编目一年后的元数据完整性质量指标。总体上，提供的属性趋于匮乏；87.58%的规范记录完全没有标记属性；但是含有内容的记录数量在过去6个月里得到增长。近8%的规范记录在一年后至少含有一个属性；近5%有两个或多个属性。

Sharing science: The state of research institutional repositories in Ghana

共享科学：加纳研究机构知识库的现状

Jenny Bossaller, Kodjo Atiso

IFLA Journal, 41-1, 25-39

世界各地的科学家受益于共享科学数据、实验记录、基础论文，以及传统且正式的科学论文。机构知识库(IR)是科学家存放成果的开放空间。这样做可能会开创新的合作机会，让科学家和学者养成跨机构能力。但是，科学家必须相信知识库是安全的，也必须了解版权法及保护。许多非洲国家正处于十字路口上：有着同训练有素的科学家一道解决主要问题的准备，却因信息通信技术的昂贵和不可预知性受到阻碍。诈骗和欺诈的猖獗也让非洲许多科学家对互联网产生了警惕。本文介绍了当前非洲信息通信技术的发展，反馈了加纳一项有关信息通信技术、数据库和机构知识库研究的发现，最后论述了对拓展知识库使用的建议。

The library in the research culture of the university: A case study of Victoria University Library

大学研究文化下的图书馆：基于维多利亚大学图书馆的个案研究

Ralph Kiel, Frances O'Neil, Adrian Gallagher, Cindy Mohammed

IFLA Journal, 41-1, 40-52

本文介绍了维多利亚图书馆的个案研究，该图书馆是较为年轻的大学图书馆，对机构研究文化的发展做出了贡献。本文以数字典藏、数字素养和图书馆新角色为侧重点，展示了各种学术交流项目和举措。该图书馆的关注点、挑战和成功对类似学术图书馆举措和项目的规划与实施具有启示意义。

The rural library's role in Ugandan secondary students' reading habits

乡村图书馆在乌干达中学生阅读习惯培养中的作用

Valeda Frances Dent, Geoffrey David Goodman

IFLA Journal, 41-1, 53-62

通过混合性研究方法，本研究侧重于该社区农村图书馆对中学生的影响。文章分析了定量数据，以探究同学生所在学校、图书馆及家庭环境相关的四项学生因素。研究对象为乌干达Kitenges社区图书馆。文章选择这些因素的依据在于，它们可以反映该环境下中学生生活的众多方面。通过对比两组学生，其中一组能够利用农村图书馆，另一组不能，文章探讨了研究问题及相关假设。

Conservation of library collections: Research in library collections conservation and its practical application at the Scientific Library of Tomsk State University

图书馆馆藏保护：托木斯克国立大学科学图书馆的馆藏保护及实际应用

Olga Manernova

IFLA Journal, 41-1, 63-69

图书馆馆藏资源保存领域的局限性导致了许多重要文件被破坏，其中不乏善本和手稿，这一问题至今尚未得到很好的解决。尽管文件保存的科学方法已有发展，但是想要在实际应用中成功施行却有众多限制。托木斯克国立大学科学图书馆是俄罗斯的主要图书馆之一，约有380万件馆藏，包括手稿和善本。然而，它在保存馆藏和修复受损文件方面却面临着重大挑战。由于各种腐蚀因素，该“西伯利亚书籍宝库”正面临着持续恶化，甚至在某些情况下完全丧失的风险。意识到这一问题后，俄罗斯当局加强了对保存的重视，包括增加资金。随着当局的日益重视，研究人员重新审视了保存和保护的方法，包括改进对存储设备和馆藏的监测，部署更好的保存和修复方法。此外，该团队推出了一个建立馆藏电子版本的进程，以减少物理访问，从而最大限度地减少进一步的损失。本文旨在以托木斯克国立大学科学图书馆为例，介绍保护的实际应用，展示改进方法带来的成果。尽管该图书馆的环境条件只针对特定区域，研究人员认为该方法适用于更广泛的保护工作，且能带来类似成效。但是，本项具体研

究目前经费不足，要全面落实上述改进措施，还需要额外增加资金。

Scholarly productivity of Arab librarians in LIS journals from 1981 to 2010: An analytical study

阿拉伯图书馆馆员在图书情报学期刊上的学术生产力(1981-2010)：分析性研究

Mahmoud Sh. Zakaria

IFLA Journal, 41-1, 70-79

目前，已有多项研究探讨了在图书情报学(LIS)期刊上发表文章的作者的特点，但还没有专门针对作者身份是阿拉伯图书馆馆员的研究。本研究试图揭示阿拉伯图书馆馆员对图书馆文献的学术贡献。通过描述并分析1981年至2010年间专业图书馆员在LIS期刊上的期刊研究出版物，本研究发现个人撰写论文最普遍，其次是两个和三个作者合作文章。LIS期刊上作者的合作平均值为9.64%(只有19篇期刊文章由至少两个或三个作者合作撰写)。最后，本研究向阿拉伯图书馆馆员提供了建议，鼓励他们进一步参与LIS领域的研究。

Sommaires

Academic libraries: A soft analysis, a warning and the road ahead

[Bibliothèques universitaires : analyse fonctionnelle, avertissement et voie à suivre]

James M. Matarazzo, Toby Pearlstein

IFLA Journal, 41-1, 5-12

L'accès via des réseaux à des bases de données en texte intégral a écarté les bibliothèques universitaires et bibliothèques d'entreprise des procédures de recherche. L'environnement à but lucratif, où les bibliothèques ne sont pas protégées par un statut prestigieux et une tradition historique, en a ressenti l'impact plus directement. L'évolution des bibliothèques d'entreprise ainsi que leurs efforts pour rester adaptées peuvent donner des idées aux bibliothèques universitaires pour les aider à faire face aux nouveaux défis. Les bibliothèques universitaires devront mettre en place de nouvelles stratégies

afin de conserver leur relation avec les étudiants, le corps enseignant et l'université et garantir ainsi leur viabilité.

Expanding the Personal-Name-Authority-Record under RDA: Current status and quality considerations

[Étendre l'enregistrement Personnel-Nom-Autorité sous RDA : situation actuelle et considérations sur la qualité]

Heather Lea Moulaison

IFLA Journal, 41-1, 13-24

Les individus sont complexes et leur description dans les notices d'autorité des bibliothèques est rendue de plus en plus sophistiquée par l'ajout d'attributs, conformément au code de catalogage RDA. Cette étude de cas faite selon une approche longitudinale examine les attributs des notices d'autorité du groupement de bibliothèques universitaires « Merlin cluster » au

bout de six mois (c'est-à-dire en septembre 2013) et d'un an (c'est-à-dire en avril 2014) après l'adoption officielle du code de catalogage RDA, afin de distinguer les tendances dans l'utilisation des champs d'attribut. Cette étude examine l'indice de complétude des métadonnées au bout d'un an de catalogage RDA. Globalement, l'indication d'attributs est plutôt rare : 87,58 % des notices d'autorité ne comportaient aucun attribut; cependant, le nombre de notices ayant un contenu avait augmenté au cours des six mois précédents. Près de 8 % des notices d'autorité comportaient au moins un attribut au bout d'un an et près de 5 % comportaient alors au moins deux attributs.

Sharing science: The state of research institutional repositories in Ghana

[Partage des données scientifiques : la situation des dépôts institutionnels de recherche au Ghana]

Jenny Bossaller, Kodjo Atiso

IFLA Journal, 41-1, 25-39

Les scientifiques du monde entier profitent du partage de données scientifiques, notes de laboratoire et études préliminaires ainsi que de documents scientifiques formels traditionnels. Les dépôts institutionnels (DI) sont des espaces ouverts où les scientifiques peuvent déposer leurs travaux. Procéder ainsi peut faire naître de nouvelles collaborations et permettre aux scientifiques et universitaires de développer des compétences inter-institutionnelles. Cependant, les scientifiques doivent pouvoir avoir confiance dans la sécurité du dépôt et bien comprendre la législation et les mesures de protection en matière de copyright. De nombreux pays africains sont à la croisée des chemins : sur le point de résoudre des problèmes majeurs grâce à des scientifiques bien formés, ils se voient barrer la route par des technologies d'information et de communication coûteuses et imprévisibles. De nombreux scientifiques africains se méfient également d'Internet en raison des escroqueries et des fraudes possibles. Cet article décrit la situation africaine actuelle en matière de TIC, évoque les conclusions d'une étude sur les TIC, les bases de données et les dépôts institutionnels au Ghana, et conclut en faisant des recommandations sur le développement de l'usage des DI.

The library in the research culture of the university: A case study of Victoria University Library

[La bibliothèque dans la culture de la recherche universitaire : une étude de cas de la bibliothèque de l'Université de Victoria]

Ralph Kiel, Frances O'Neil, Adrian Gallagher, Cindy Mohammed

IFLA Journal, 41-1, 40-52

Cet article présente une étude de cas réalisée à la bibliothèque de l'Université de Victoria, une bibliothèque universitaire relativement jeune qui s'emploie à développer une toute nouvelle culture de recherche au sein d'une institution. L'article s'intéresse à divers projets et initiatives savants de communication et plus particulièrement dépôts numériques, cultures numériques et nouveaux rôles des bibliothèques. Les préoccupations, défis et succès de la bibliothèque peuvent fournir des informations pour planifier et mettre en œuvre des initiatives et des projets dans des bibliothèques universitaires similaires.

The rural library's role in Ugandan secondary students' reading habits

[Le rôle des bibliothèques rurales dans le comportement de lecture des élèves du secondaire ougandais]

Valeda Frances Dent, Geoffrey David Goodman

IFLA Journal, 41-1, 53-62

Cette étude basée sur des méthodes mixtes examine l'impact d'une bibliothèque de village rural sur les élèves de l'enseignement secondaire de la communauté. Des données quantitatives ont été analysées afin d'étudier quatre facteurs en rapport avec les étudiants et leur environnement à l'école, à la bibliothèque et à la maison. L'étude a été effectuée à la bibliothèque communautaire de Kitengesa en Ouganda. Les facteurs examinés dans le cadre de cette étude ont été choisis parce qu'ils donnent un aperçu de la vie des élèves de l'enseignement secondaire dans leur environnement en fonction de trois aspects déterminants. Les questions posées par l'étude et les hypothèses relatives ont été explorées en comparant deux groupes d'élèves – un groupe ayant accès à la bibliothèque rurale, l'autre pas.

Conservation of library collections: Research in library collections conservation and its practical application at the Scientific Library of Tomsk State University

[Conservation des collections bibliothécaires : recherche sur la conservation des collections bibliothécaires et son application pratique à la bibliothèque scientifique de l'Université d'État de Tomsk]

Olga Manernova

IFLA Journal, 41-1, 63-69

Les moyens limités de conservation des collections bibliothécaires ont entraîné la destruction de nombreux documents précieux, y compris des livres et manuscrits rares, dont il n'avait pas été suffisamment tenu compte jusqu'à une période récente. Bien que des approches scientifiques de la conservation des documents aient été mises au point, leur mise en œuvre avec succès a été entravée par des contraintes importantes sur le plan de l'application pratique. La bibliothèque scientifique de l'Université d'État de Tomsk est l'une des principales bibliothèques de Russie ; elle abrite 3,8 millions d'objets environ, y compris des manuscrits et livres rares. Cependant, les défis rencontrés pour conserver la collection de la bibliothèque et restaurer des documents endommagés ont été considérables. Sachant que ce « trésor d'information livresque de Sibérie » risquait de continuer à se dégrader et même dans certains cas, d'être définitivement perdu en raison de diverses causes de décomposition, les autorités russes ont accordé plus d'importance à la conservation, y compris en mettant des fonds supplémentaires à disposition. Grâce à ces efforts accrus, les recherches menées ont permis de redéfinir l'approche de la préservation et de la conservation, notamment en contrôlant mieux les équipements de stockage et les collections et en instaurant de meilleures pratiques de conservation et de restauration. De plus, l'équipe a entrepris la numérisation de la collection de la bibliothèque afin de réduire l'accès physique et par conséquent d'éviter des dégâts supplémentaires. Cet article décrit les méthodes de conservation dans la pratique en prenant pour exemple la bibliothèque scientifique de l'Université d'État de Tomsk pour montrer les résultats positifs d'une meilleure approche. Bien que les

conditions environnementales de la bibliothèque soient spécifiques à ce seul site, cette approche devrait pouvoir être appliquée avec une même efficacité à des efforts de conservation plus larges. Cependant, un financement supplémentaire sera nécessaire pour mener à bien ces pratiques améliorées, le budget actuellement alloué à cette étude spécifique étant insuffisant.

Scholarly productivity of Arab librarians in LIS journals from 1981 to 2010: An analytical study

[La contribution savante des bibliothécaires arabes aux revues de sciences de l'information et des bibliothèques de 1981 à 2010 : une étude analytique]

Mahmoud Sh. Zakaria

IFLA Journal, 41-1, 70-79

Diverses études se sont intéressées aux caractéristiques des auteurs ayant publié dans des revues de sciences de l'information et des bibliothèques (SIB). Bien qu'aucune n'ait été consacrée spécifiquement aux bibliothécaires arabes en tant qu'auteurs, cette étude tente de mettre en lumière les contributions savantes de bibliothécaires arabes. L'étude décrit et analyse les publications scientifiques faites par des bibliothécaires professionnels dans des revues de SIB de 1981 à 2010. Les articles rédigés par un seul auteur sont les plus fréquents, suivis des articles rédigés par deux ou trois auteurs. Le taux moyen de collaboration entre auteurs dans des revues de SIB est de 9,64 % (seuls 19 articles de revue sont rédigés par deux ou trois auteurs au moins). En conclusion, l'étude fait des recommandations aux bibliothécaires arabes, les encourageant à s'engager d'avantage dans la recherche sur les disciplines des SIB.

Zusammenfassungen

Academic libraries: A soft analysis, a warning and the road ahead

[Wissenschaftliche Bibliotheken: Eine weiche Analyse, eine Warnung und der Weg in die Zukunft]

James M. Matarazzo, Toby Pearlstein

IFLA-Journal, 41-1, 5-12

Der Netzzugriff auf Volltext-Datenbanken wirkt sich störend auf die Forschungstätigkeiten wissenschaftlicher

Bibliotheken sowie Firmenbibliotheken aus. Die Umgebung in Organisationen mit Erwerbscharakter, wo die Bibliotheken weniger durch organisatorisches Ansehen und historische Traditionen isoliert sind, wird davon unmittelbar beeinflusst. Den Veränderungen bei den Firmenbibliotheken sowie ihren Bemühungen zum Erhalt der Relevanz können die wissenschaftlichen Bibliotheken wertvolle Hinweise für den Umgang mit der neuen Realität entnehmen. Die wissenschaftlichen Bibliotheken benötigen neue Strategien für ihre Beziehungen zu den Studenten, dem Lehrkörper und der Wissenschaft sowie zur Gewährleistung der Nachhaltigkeit.

Expanding the Personal-Name-Authority-Record under RDA: Current status and quality considerations

[Erweiterung der persönlichen Normdateien (Personal-Name-Authority-Record) unter RDA: Die heutige Situation mit entsprechenden Qualitätsbetrachtungen]

Heather Lea Moulaison

IFLA-Journal, 41-1, 13-24

Menschen sind komplex und ihre Darstellung in den Normdateien der Bibliotheken wird immer komplizierter, da gemäß den RDA-Regeln immer mehr Attribute hinzugefügt werden. Die vorliegende Fallstudie untersucht die Attribute in den Normdateien aus dem Merlin-Cluster wissenschaftlicher Bibliotheken nach sechs Monaten (im September 2013) beziehungsweise einem Jahr (im April 2014) nach der offiziellen Implementierung des RDA-Systems im Rahmen einer Längsschnittuntersuchung, um eventuell vorhandene Trends bezüglich der Anwendung der Attribute vor Ort feststellen zu können. Nach einjähriger RDA-Katalogisierung misst diese Studie die Vollständigkeit als Metadatenqualitätsindikator. Insgesamt waren nicht allzu viele Attribute bereitgestellt worden; 87,58 Prozent der Normdateien besaßen überhaupt keine Attribute, allerdings war die Zahl der Dateien mit entsprechenden Inhalten in den vorangegangenen 6 Monaten gestiegen. Fast 8 Prozent der Normdateien hatten nach einem Jahr mindestens ein Attribut; und fast 5 Prozent besaßen zwei oder mehr Attribute.

Sharing science: The state of research institutional repositories in Ghana

[Wissenschaftlicher Austausch: der Zustand der institutionellen Repositorien in Ghana]

Jenny Bossaller, Kodjo Atiso

IFLA-Journal, 41-1, 25-39

Die Wissenschaftler in der ganzen Welt profitieren vom Austausch wissenschaftlicher Daten, Laborberichte und vorläufiger Arbeitspapiere sowie traditioneller formeller wissenschaftlicher Artikel. Institutionelle Repositorien (IR) sind Freiräume, in denen die Wissenschaftler ihre Arbeiten ablegen können. Dadurch können möglicherweise neue Kollaborationen entstehen, so dass Wissenschaftler und Gelehrte institutsübergreifende Kapazitäten entwickeln können. Allerdings müssen sich die Wissenschaftler in diesem Fall darauf verlassen können, dass die Repositorien gut geschützt sind, und sie müssen sich mit dem Urheberrechtsgesetz und dem

Urheberrechtsschutz auskennen. Viele Länder in Afrika stehen hier am Scheideweg: Einerseits können mit gut ausgebildeten Wissenschaftlern eingreifende Probleme gelöst werden; andererseits werden diese Bemühungen durch kostspielige, unvorhersehbare ICT gebremst. Zudem stehen viele Wissenschaftler in Afrika dem Internet aufgrund der vielen Scams und Betrugsfälle skeptisch gegenüber. Der vorliegende Beitrag beschreibt die aktuellen ICT-Entwicklungen in Afrika, er beschreibt Befunde aus einer ICT-Studie, Datenbanken und IRs in Ghana und schließt mit entsprechenden Empfehlungen zur erweiterten Nutzung der IRs ab.

The library in the research culture of the university: A case study of Victoria University Library

[Die Bibliothek in der Forschungskultur der Universität: eine Fallstudie der Victoria University Library]

Ralph Kiel, Frances O'Neil, Adrian Gallagher, Cindy Mohammed

IFLA-Journal, 41-1, 40-52

Der vorliegende Artikel beschreibt eine Fallstudie der Victoria University Library, einer relativ jungen Universitätsbibliothek, die zur Entwicklung der aufkeimenden Forschungskultur an der Institution beiträgt. Dieser Beitrag präsentiert eine Reihe von wissenschaftlichen Kommunikationsprojekten und entsprechende Initiativen und befasst sich dabei schwerpunktmäßig mit digitalen Repositorien, digitalen Kompetenzen und der Übernahme neuer Rollen durch die Bibliotheken. Die Anliegen, Herausforderungen und Erfolge der Bibliothek können zur Planung und Implementierung solcher Initiativen und Projekte in ähnlichen wissenschaftlichen Bibliotheken beitragen.

The rural library's role in Ugandan secondary students' reading habits

[Der Einfluss ländlicher Bibliotheken auf die Lesegewohnheiten von Jugendlichen in Uganda]

Valeda Frances Dent, Geoffrey David Goodman

IFLA-Journal, 41-1, 53-62

Diese Studie, die sich auf gemischte Forschungsmethoden stützt, befasst sich schwerpunktmäßig mit dem Einfluss einer ländlichen Dorfbibliothek auf Schüler der Sekundärstufe, die in dieser Gemeinschaft leben. Dabei wurden quantitative Daten analysiert, um bei den Schülern vier Einflussfaktoren im Zusammenhang

mit der Schule, der Bibliothek und dem jeweiligen häuslichen Milieu zu klären. Die Studie wurde an der Kitengesa Community Library in Uganda durchgeführt. Die im Rahmen dieser Studie betrachteten Parameter wurden ausgewählt, weil sie eine Momentaufnahme aus dem Leben der Sekundarschüler in diesem Umfeld in Bezug auf diverse kritische Bereiche bieten. Die Fragestellungen im Rahmen dieses Forschungsprojekts und die entsprechenden Hypothesen wurden durch den Vergleich zweier Gruppen von Schülern untersucht, wobei eine Gruppe Zugang zu einer ländlichen Bibliothek hatte und die andere Gruppe nicht.

Conservation of library collections: Research in library collections conservation and its practical application at the Scientific Library of Tomsk State University

[Konservierung von Bibliotheksbeständen: Forschungsergebnisse zur Konservierung von Bibliotheksbeständen und ihr praktischer Einsatz in der Wissenschaftlichen Bibliothek der Staatsuniversität Tomsk]

Olga Manernova

IFLA-Journal, 41-1, 63-69

Durch eine Reihe von Schwierigkeiten mit der Aufbewahrung von Bibliotheksbeständen ist eine Vielzahl wichtiger Dokumente zerstört worden, einschließlich seltener Bücher und Manuskripte – ein Problem, das bis vor Kurzem nicht in hinreichendem Maß beachtet wurde. Obwohl wissenschaftliche Verfahren zur Aufbewahrung von Dokumenten entwickelt worden sind, ist ihre erfolgreiche Anwendung in der Praxis auf erhebliche Schwierigkeiten gestoßen. Die Wissenschaftliche Bibliothek der Staatsuniversität Tomsk ist eine der wichtigsten Bibliotheken Russlands mit einem Bestand von etwa 3,8 Millionen Stücken; dazu zählen auch Manuskripte und seltene Bücher. Allerdings stellen der Erhalt der Bibliotheksbestände und die Wiederherstellung der beschädigten Dokumente eine erhebliche Herausforderung dar. Angesichts der Tatsache, dass dieser „Bücherschatz Sibiriens“ in Gefahr war, weiterhin zu verfallen und in einigen Fällen aufgrund gefährlicher Zersetzungsprozesse sogar ganz verloren zu gehen, haben sich die russischen Behörden verstärkt mit der Aufbewahrung befasst und auch zusätzliche Finanzmittel bereitgestellt. Aufgrund dieses erhöhten Interesses haben die Forscher die Aufbewahrungs- und Konservierungsverfahren überdacht; was auch die verbesserte

Überwachung der Lagereinrichtungen und Bestände und die Einführung besserer Methoden zur Aufbewahrung und Restaurierung beinhaltet. Außerdem hat das Team ein Verfahren zur Erstellung elektronischer Versionen der Bibliotheksbestände entwickelt, um den physischen Zugang zu verringern und somit weitere Schäden auf ein Minimum zu reduzieren. Ziel dieses Artikels ist die Beschreibung der praktischen Anwendung der Konservierungsverfahren am Beispiel der Wissenschaftlichen Bibliothek der Staatsuniversität Tomsk als Fallstudie, um die Erfolge aufzuzeigen, die sich mit einem verbesserten Verfahren erzielen lassen. Obwohl die Umgebungsbedingungen in der Bibliothek ortstypisch waren, ist davon auszugehen, dass dieses Verfahren mit ähnlicher Effektivität auch im Rahmen von Konservierungsbemühungen auf einer breiteren Basis zur Anwendung gelangen kann. Allerdings werden weitere finanzielle Mittel benötigt, für die es zurzeit kein ausreichendes Budget in Bezug auf diese spezifische Studie gibt, um die verbesserten Methoden vollständig auszuarbeiten.

Scholarly productivity of Arab librarians in LIS journals from 1981 to 2010: An analytical study

[Wissenschaftliche Veröffentlichungen arabischer Bibliothekare in LIS-Zeitschriften von 1981 bis 2010: Eine analytische Studie]

Mahmoud Sh. Zakaria

IFLA-Journal, 41-1, 70-79

Diverse Studien haben sich mit den Eigenschaften von Autoren befasst, die in den Fachzeitschriften der Bibliotheks- und Informationswissenschaft (Library and Information Science, LIS) publiziert haben. Obwohl sich keiner dieser Autoren speziell auf die Rolle arabischer Bibliothekare als Autoren konzentriert hat, versucht die vorliegende Studie, die wissenschaftlichen Beiträge arabischer Bibliothekare zur bibliothekswissenschaftlichen Literatur aufzuzeigen. Die Studie beschreibt und analysiert die Forschungsberichte von professionellen Bibliothekaren in LIS-Fachzeitschriften zwischen 1981 und 2010. Am häufigsten kommen Artikel vor, die nur von einem Autor verfasst wurden, gefolgt von Artikeln von zwei beziehungsweise drei Autoren. Der durchschnittliche Kollaborationsgrad zwischen den Autoren in LIS-Zeitschriften liegt bei 9,64% (es fanden sich nur 19 Artikel in Fachzeitschriften, die von mindestens zwei oder drei Autoren verfasst wurden). Abschließend empfiehlt diese Studie den arabischen Bibliothekaren, die weitere Forschung im Fachbereich LIS zu stimulieren.

Рефераты статей

Библиотеки учебных заведений: Мягкий анализ, предупреждение и перспективы

Джеймс М. Матарацио, Тоби Перлстейн

IFLA Journal, 41-1, 5-12

Наличие сетевого доступа к электронным базам данных, содержащим полные тексты документов, оказало пагубное воздействие на участие библиотек как учебных заведений, так и предприятий в научно-исследовательской деятельности. В условиях ориентации на получение прибыли, когда библиотеки более уязвимы при отсутствии престижа организации и исторических традиций, такое влияние проявилось особенно быстро. Перемены в библиотеках предприятий, а также их деятельность, направленная на сохранение собственной значимости, могут послужить подсказкой для библиотек учебных заведений, каким образом противостоять современным условиям. Для обеспечения собственной жизнестойкости библиотекам учебных заведений понадобятся новые приемы, направленные на поддержание взаимоотношений со студентами, преподавательским и научным составом.

Расширение записей в карточке “Имя-Допуск” согласно правилам RDA: Рассмотрение текущей ситуации и вопросов качества

Хезер Ли Мулезон

IFLA Journal, 41-1, 13-24

Каждый человек является сложным субъектом, и составление его описания в библиотечной карточке допуска становится все более трудным в связи с добавлением характеристик согласно правилам Описания источника и доступа к нему (RDA). В рамках настоящего практического анализа с применением метода повторного исследования были изучены характеристики в карточках доступа библиотек учебных заведений группы MERLIN как через 6 месяцев (т.е. в сентябре 2013 г.), так и через 1 год (т.е. в апреле 2014 г.) после официального принятия RDA для оценки тенденций использования поля для внесения характеристик. В рамках настоящей работы после одного года каталогизации в соответствии с правилами RDA исследуется качественный показатель полноты метаданных. В целом наблюдается тенденция к редкому указанию характеристик: 87,58 процентов карточек доступа вообще не имеют

характеристик, тем не менее, за предыдущие 6 месяцев увеличилось количество карточек, имеющих соответствующие данные. Почти 8 процентов карточек доступа по истечении года имели как минимум одну характеристику; и почти 5 процентов имели две характеристики или более.

Делимся наукой: состояние хранилищ научных учреждений в Гане

Дженни Боссаллер, Коджо Атисо

IFLA Journal, 41-1, 25-39

Ученые по всему миру извлекают пользу из обмена научной информацией, записями о лабораторных исследованиях и предварительными документами, а также обычными формальными научными документами. Хранилища учреждений (IR) являются для научных работников открытым пространством, где они могут хранить свои работы. Следствием такой практики может стать возникновение совместных проектов, позволяющих ученым деятелям, а также научным сотрудникам формировать взаимодействие на уровне научных и учебных учреждений. Однако ученые должны верить в то, что хранилище защищено, они также должны понимать значение закона об авторском праве и защите авторского права. Многие государства Африки стоят на перепутье: они готовы решать первоочередные задачи силами высококвалифицированных ученых, при этом они поставлены в тупик дорогими и непредсказуемыми информационно-коммуникационными технологиями (ICT). Многие ученые Африки также настороженно относятся к сети Интернет в связи с большим количеством случаев мошенничества и обмана. В данной работе описан современный ход развития ICT в Африке, приводятся результаты исследования в области ICT, баз данных, а также хранилищ учреждений в Гане, а в завершение изложены рекомендации относительно расширения использования хранилищ учреждений.

Библиотека в культуре исследовательской работы университета: исследование на примере Библиотеки Университета Виктория

Ральф Киль, Франсе О'Неил, Эдриан Галлахер, Синди Мохаммед

IFLA Journal, 41-1, 40-52

В настоящей статье представлен анализ текущей ситуации в Библиотеке Университета Виктория как

относительно молодой университетской библиотеке, которая вносит свой вклад в развитие зарождающейся культуры исследовательской работы учебного заведения. В ней показаны различные академические проекты и инициативы по развитию коммуникаций, при этом особое внимание уделено цифровым хранилищам, цифровой грамотности и новой роли библиотек. Проблемные вопросы, основные задачи и успехи Библиотеки могут стать информационным подспорьем при планировании и реализации инициатив и проектов в схожих библиотеках учебных заведений.

Роль сельских библиотек в формировании у школьников Уганды тяги к чтению

Валеда Франсе Дент, Джеффри Дэвид Гудман

IFLA Journal, 41-1, 53-62

В ходе данного исследования использовался смешанный метод, а предметом исследования являлось влияние сельской библиотеки на учеников средней школы соответствующего сообщества. Был выполнен анализ количественных данных с целью выявления четырех факторов, оказывающих влияние на учеников и относящихся к окружающей их среде в школе, в библиотеке и дома. Местом проведения исследования была Библиотека Сообщества Китенгеса в Уганде. Факторы, рассматриваемые в рамках настоящего исследования, были выбраны по той причине, что они позволяют получить быстрое представление о жизни учеников средней школы в данных условиях в разрезе критических вопросов. Рассмотрение вопросов исследования и соответствующих гипотез выполнялось путем сравнения двух групп студентов: одна группа имела доступ к сельской библиотеке, а вторая - не имела.

Консервация библиотечных фондов: Исследование в области консервации библиотечных фондов и его практическое применение в Научной библиотеке Томского государственного университета

Ольга Манернова

IFLA Journal, 41-1, 63-69

Ограничения в области сохранения библиотечных фондов привели к утере многих важных документов, включая редкие книги и рукописи, которым до недавнего времени не уделялось должного

внимания. Несмотря на разработку научных подходов в области сохранения документов, их успешному использованию препятствовали факторы, существенно ограничивающие применение на практике. Научная библиотека Томского государственного университета является одной из крупнейших библиотек России, в которой хранится около 3,8 миллиона томов, включая рукописи и редкие книги. Однако сохранение фонда библиотеки и восстановление поврежденных документов представляли поистине серьезную задачу. Сознавая, что это "Сибирское книжное сокровище" подвергается опасности продолжающегося разрушения и, в некоторых случаях, полного уничтожения вследствие воздействия различных источников разложения, российские власти сделали особый упор на его сохранение, включая дополнительное финансирование. Благодаря такому повышенному вниманию исследователи пересмотрели подход к сохранению и консервации, включая улучшение контроля над хранилищем и фондами, а также разработку более эффективных методов сохранения и реставрации. Кроме того, команда запустила процесс создания электронных версий находящихся в библиотеке документов с целью ограничения физического доступа к ним, чтобы минимизировать таким образом их дальнейшее разрушение. Целью настоящей статьи является описание практического применения консервации на реальном примере Научной библиотеки Томского государственного университета, который демонстрирует успешный результат усовершенствованного подхода. Несмотря на то, что окружающие условия в библиотеке были характерны для конкретного заданного места, считается, что указанный подход может применяться более широко и иметь схожую эффективность в части усилий, направленных на консервацию. Тем не менее, для полного завершения указанных расширенных мероприятий потребуется дополнительное финансирование, для которого в настоящее время недостаточно средств, выделенных в связи с данным конкретным исследованием.

Научная производительность библиотекарей арабского происхождения в периодических изданиях, посвященных библиотековедению и науке об информации: Аналитическое исследование

Махмуд Ш. Закариа

IFLA Journal, 41-1, 70-79

В нескольких исследованиях обсуждались черты авторов, работы которых публиковались в периодических изданиях, связанных с библиотековедением и наукой об информации. Несмотря на то, что ни в одном из них особое внимание не уделялось авторам, являющимся библиотекарями арабского происхождения, в настоящей работе сделана попытка раскрыть академический вклад библиотекарей арабского происхождения в литературу, посвященную библиотековедению. В работе приводятся описание и анализ публикаций в научных периодических изданиях, посвященных библиотековедению и науке об информации, за период с 1981 по 2010 годы, авторами которых

являются профессиональные библиотекари. Наиболее распространенными являются статьи, написанные одним автором, затем следуют статьи с двумя и тремя авторами. Средний уровень взаимодействия авторов периодических изданий, посвященных библиотековедению и науке об информации, составляет 9,64% (лишь 19 статей в периодических изданиях написаны двумя или тремя авторами). В заключение настоящей работы приводятся рекомендации для библиотекарей арабского происхождения, целью которых является поощрение более широкого участия в исследованиях, посвященных библиотековедению и науке об информации.

Resúmenes

Bibliotecas universitarias: análisis genérico, advertencias y retos futuros

James M. Matarazzo, Toby Pearlstein

IFLA Journal, 41-1, 5-12

El acceso en red a bases de datos de textos completos ha hecho que las bibliotecas, tanto universitarias como corporativas, desvíen su atención del proceso de investigación. Este efecto se ha dejado sentir de manera más inmediata en el ámbito de las entidades con ánimo de lucro, en el que la categorización de las bibliotecas en función de su prestigio como organización o su tradición histórica resulta menos importante. Los cambios experimentados por las bibliotecas corporativas, así como las iniciativas llevadas a cabo por estas con el fin de mantener su prestigio, pueden proporcionar ideas a las bibliotecas universitarias sobre cómo hacer frente a la nueva realidad. Para garantizar su sostenibilidad, las bibliotecas universitarias necesitarán adoptar nuevas estrategias que les permitan mantener su relación con los estudiantes y miembros de los cuerpos docente y académico.

Generalización del uso del Registro de Autoridad de Nombres de Persona en virtud de la norma de catalogación RDA: situación actual y reflexiones en materia de calidad

Heather Lea Moulaison

IFLA Journal, 41-1, 13-24

Las personas constituyen una realidad compleja, y su representación en los registros de autoridad de las

bibliotecas está adquiriendo cada vez un mayor grado de sofisticación a raíz de la adición de atributos en virtud de la aplicación de la norma RDA. El presente estudio de caso, en el que se aplicó un enfoque longitudinal, analiza los atributos de los registros de autoridad existentes en la plataforma Merlin de las bibliotecas universitarias en dos momentos: seis meses después de la aprobación oficial de la norma RDA (es decir, en septiembre de 2013) y un año después de dicho acontecimiento (es decir, en abril de 2014), con el fin de valorar la evolución en el uso de los campos de atributos. Tras un año de utilización del sistema de catalogación RDA, este estudio examina el indicador de calidad basado en metadatos relativo a la integridad. En general, los atributos introducidos suelen ser escasos; el 87,58 % de los registros de autoridad no contaba con un solo atributo, pero el número de registros con algún tipo de contenido había aumentado a lo largo de los 6 meses anteriores. Casi el 8 % de los registros de autoridad contaba con al menos un atributo al cabo de un año, y prácticamente el 5 % contaba con dos o más atributos.

La divulgación de la ciencia: estado de los archivos institucionales de investigación en Ghana

Jenny Bossaller, Kodjo Atiso

IFLA Journal, 41-1, 25-39

Científicos de todo el mundo aprovechan las ventajas que les ofrece el intercambio de datos científicos, cuadernos de laboratorio y documentos preliminares, así como de documentos científicos oficiales en formato tradicional. Los archivos institucionales constituyen

espacios de libre acceso en los que los científicos pueden depositar sus trabajos. Este procedimiento puede fomentar el surgimiento de nuevas experiencias de colaboración, lo que permite a los científicos y miembros de la comunidad académica desarrollar la capacidad interinstitucional. Sin embargo, los científicos deben confiar en la seguridad de dichos archivos y entender las leyes y los mecanismos de protección relativos a los derechos de autor. Muchos países africanos se encuentran en una encrucijada: por un lado, preparados para resolver problemas importantes con la ayuda de científicos debidamente formados pero, por otro, frenados por el alto coste y los resultados impredecibles del uso de las tecnologías de la información y las comunicaciones (TIC). Numerosos científicos africanos también desconfían de Internet debido al aumento incontrolado del número de casos de fraude y estafa. El presente artículo describe el desarrollo actual de las TIC en África, exponiendo los resultados de un estudio sobre las TIC, las bases de datos y los archivos institucionales en Ghana y formulando, por último, recomendaciones para generalizar el uso de dichos archivos.

El papel de la biblioteca dentro de la cultura investigadora de la universidad: estudio de caso sobre la Biblioteca de la Universidad de Victoria (Australia)

Ralph Kiel, Frances O'Neil, Adrian Gallagher, Cindy Mohammed

IFLA Journal, 41-1, 40-52

El presente artículo expone un estudio de caso sobre la Biblioteca de la Universidad de Victoria (Australia), en su calidad de biblioteca de fundación relativamente reciente que contribuye al desarrollo de la cultura investigadora emergente de la institución. El artículo destaca varios proyectos e iniciativas de comunicación académica, haciendo especial hincapié en los archivos digitales, los niveles de alfabetización digital y el nuevo papel otorgado a las bibliotecas. Los problemas, retos y éxitos de dicha Biblioteca pueden servir para diseñar la planificación y ejecución de diversas iniciativas y proyectos en otras bibliotecas universitarias similares.

El papel de las bibliotecas rurales en los hábitos de lectura entre los estudiantes de secundaria ugandeses

Valeda Frances Dent, Geoffrey David Goodman

IFLA Journal, 41-1, 53-62

Este estudio, basado en una perspectiva multimetodológica, se centra en analizar la repercusión de la presencia de una biblioteca en una aldea rural sobre los alumnos de enseñanza secundaria de la comunidad. Se analizaron datos cuantitativos con el fin de estudiar cuatro factores referidos a los alumnos y relacionados con los entornos de su centro de enseñanza, la biblioteca y su hogar familiar. La Biblioteca Comunitaria de Kitengesa, en Uganda, sirvió como lugar de realización del estudio. Los factores analizados en el presente estudio se seleccionaron en virtud de su capacidad para facilitar una imagen representativa de las vidas de los alumnos de enseñanza secundaria de dicho entorno en diversos ámbitos fundamentales. Las cuestiones planteadas por la investigación y las hipótesis vinculadas a aquellas se analizaron mediante la comparación de dos grupos de alumnos: un grupo con acceso a la biblioteca rural y otro grupo carente de dicho acceso.

Conservación de colecciones de bibliotecas: la investigación sobre conservación de colecciones de bibliotecas y su aplicación práctica en la Biblioteca Científica de la Universidad Estatal de Tomsk

Olga Manernova

IFLA Journal, 41-1, 63-69

Las limitaciones existentes en el campo de la conservación de colecciones de bibliotecas han llevado a la destrucción de muchos documentos importantes, entre ellos, libros y manuscritos valiosos a los que, hasta hace poco, no se había prestado suficiente atención. A pesar de haberse desarrollado diversos enfoques científicos en el ámbito de la conservación de documentos, su aplicación satisfactoria se topa con las limitaciones fundamentales que conlleva la aplicación práctica. La Biblioteca Científica de la Universidad Estatal de Tomsk es una de las principales bibliotecas de Rusia y alberga aproximadamente 3,8 millones de ejemplares, entre ellos, manuscritos y libros valiosos. Sin embargo, se han planteado importantes retos a la hora de conservar la colección de la biblioteca y restaurar los documentos deteriorados. Conscientes de que este "preciado tesoro bibliográfico de Siberia" se enfrentaba a un riesgo de deterioro continuo y, en algunos casos, a su pérdida absoluta debido a la presencia de diversos agentes de descomposición, las autoridades rusas han otorgado más importancia a la conservación destinando una mayor cantidad de recursos financieros, entre otras medidas. Gracias a este aumento de la atención prestada, los investigadores han podido revisar el