Ebrarians: Meeting the Challenges of E-resources Head on! New Professionals Discuss the Management of Electronic Resources

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Ryan Weir, Geoffrey P. Timms, George Stachokas, and Regina Koury, "Ebrarians: Meeting the Challenges of E-resources Head on! New Professionals Discuss the Management of Electronic Resources" (2009).
Proceedings of the Charleston Library Conference.
<http://dx.doi.org/10.5703/1288284314730>

EBRARIANS: MEETING THE CHALLENGES OF E-RESOURCES HEAD ON! NEW PROFESSIONALS DISCUSS THE MANAGEMENT OF ELECTRONIC RESOURCES.

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Introduction:

The following four papers detail the individual views of four different electronic resources on the following topics: paying for electronic resources, collection development of e-resources, management and delivery of e-resources and education and training for e-resource librarians.

Paying for electronic resources

Regina Koury, *Idaho State University*

As an electronic resources librarian, you have to stay on the top of your game to facilitate seamless access to information resources. It is a fast paced job and requires knowledge of computer technology, interpersonal written and oral communication skills, management skills, energy, flexibility, desire to learn constantly and last but not least a sense of humor. Some of your most challenging day-to-day tasks will include license negotiations, the compiling of usage statistics, and electronic resources troubleshooting.

At various universities the process of license negotiations and signing goes through several levels of administration, but as an Electronic Resources Librarian you'll be the first to look at the license and suggest any changes. Learn to identify what is important to your institution. For example, at Idaho State University there are several areas which we are concerned with: single site vs. multi site, methods for off-campus authentication, number of concurrent users, walk in users (because we are a State University), confidentiality clause, terms and conditions, cancellation terms, ability to ILL, course-packs and e-reserves, post cancellation access and archiving. All of these are covered in great detail in a recent book: *Licensing and Managing Electronic Resource* by Becky Albitz (2008).

In particular, single vs. multi-site license have been a challenge for us, because Idaho State University has several campuses, from 30 minutes to 2 hours away from our main campus, all of which are administered centrally. Inserting a clause which defines what a site is and how it is administered has worked for us with various publishers. Those vendors who do not negotiate are usually at the top of the list when it comes to budget cuts. We inform university faculty of the restrictions or unjustifiable price increases when the time comes to review subject journal list or databases list for budget cuts.

Terms and Conditions is another area we pay a lot of attention to. We recently had a major business database provider who changed cancellation terms from the original 30 days to 60 days without notification and would not let us cancel their database. After two months of negotiations and working with our legal counsel and library dean, we cancelled the database and paid a third of the \$13,000 full price. Because of this, we now insert a clause, borrowed from ISU's purchasing department: "Changes of specifications or modification of this Agreement in any particular can be affected only upon written consent of the ISU Eli. M Oboler Library, but not until any proposed change or modification has been submitted in writing, signed by the party proposing the said change."

In addition to negotiating terms e –resource librarians must be able to justify purchases throughout the fiscal year. Usage statistics can be part of that justification. Gathering and

interpreting usage statistics is an important responsibility of an Electronic Resources Librarian. Why? Because when budget cuts come, you can see what journals and databases have been used and what haven't and cancel most of the unused resources. It is likely that as an Electronic resources Librarian you will be responsible for the collection of that statistics and sending them out to library subject liaisons. There are vendors that offer statics gathering services: SWET's Scholarly Stats, Serials Solutions for a fee, however if your budget is tight than you collect them manually. If most of your resources are from the COUNTER compliant vendors then you have consistency in comparing usage stats. There are searches and sessions for databases and full text downloads for journals, which make it easier to calculate cost-per-search or cost-per-download. There are however, some exceptions: you will also find vendors which would have no idea what is COUNTER compliant, or the vendor will provide usage stats only if you subscribe for extra fees to single site multiple users. For example if your library pays \$400 your to get online access four computer stations, to get the usage statistics the library may have to pay an extra \$400 to get access on all the computers on single campus.

As an electronic resources librarian you are depending on and communicating with many departments: reference and instruction, IT, acquisitions, legal counsel and university faculty. Making sure that you maintain good relations with them will make your job easier. As a library liaison, you can inform your faculty which vendors are restrictive and in the time of budget cuts, and resources from those vendors will most likely be the ones to be cancelled. If you are not responsible for library server and your proxy server, make friends with IT people. Ours are great and are always explaining what we need to make things work.

It is important to document your workflow process. We do not have an ERM, however my predecessor, created an Access database with DLF ERMI License elements, which keeps information on administrative username and passwords, license restrictions, etc. and which I am now updating. She also created an E-resources survival guide, with information from our IP ranges to contact information from vendors.

Electronic resources field is constantly evolving. Luckily, librarians are always willing to help and answer each other's questions. Reading literature, attending conferences and networking with colleagues will help you to stay relevant in the field.

Collection development and electronic resources - Print vs. electronic format, assessing patron needs, gathering the right information about how to build and maintain appropriate collections for specific academic programs
Ryan Weir, Murray State University

Collection development of electronic resources is in many ways much like that for print resources. However, pricing, access and contractual obligations differ greatly. Electronic Resource librarians deal with a wide variety of products: journals, e-books, databases, information services, metasearch engines, ERM systems, AtoZ pages, link resolvers, and any number of other types of electronic products. When collecting electronic resources one needs to evaluate each potential resource for the following:

1. Institutional need
2. Print Journal Format vs. Electronic Journal Format
3. Justification of expense
4. Alternate platform availability
5. Usage restrictions
6. Open source alternatives
7. Content overlap
8. Staffing requirements
9. Interoperability of systems and resources
10. Access vs. Ownership

One could make the argument that accessing institutional need is a fairly cut and dry decision. However, in dealing with electronic resources there are a multitude of variants that can and do come into play. Based on the size and scope of the institution in which you serve, the needs of the institution vary greatly, and even within a single institution the perceptions of those needs also vary greatly. When assessing institutional need an electronic resources library needs to carefully review the following:

1. Will the resource serve a large portion of the university community or just a specialized group?
2. Is the content housed within this resource available by any other means already available to the institution?
3. Does the proposed resource contribute to the Mission of the institution?
4. Does the proposed resource contribute to the Strategic Plan of the Institution?
5. Is the institution able to support the resource long-term both financially and with an adequate technology infrastructure?

The print versus electronic debate is much too large an issue to discuss here in depth, however when deciding on the make-up of you collection this concept must be addressed. Most universities are moving to collection ratios that heavily favor electronic content. However, in some instances and with certain subject areas print may be the preferred medium. Having a good communication structure in place with your subject librarians and the academic departments is vital to the success attaining the right ratio for you institution. There are many things to consider when making the jump to electronic from print. These include: pricing, access restrictions, perpetual access, and a wide range of other issues that may or may not be institutionally specific.

Every electronic resources librarian should be familiar with the concept of justification of expense. This is one of the main reasons that we as electronic resource professionals spend a large portion of time keeping up statistics, running trials, and surveying our institutions on resource use and interest. Being able to justify expense through data is important when building and weeding the library's collection. You need to be able to justify the acquisition of a \$30,000 per year database by showing a lack of coverage and large buy-in across campus as well as be able to make the argument for cutting the \$15,000 per year journal that was only access for full-text and average of 10 times per year over the past 3 years. Part of this evaluation also includes: overlap analysis, alternate interface availability, and the exploration of open source alternatives.

Staffing Levels and System Interoperability must also be addressed when evaluating any resource. You must have a sufficient number staff to implement and maintain a new resource. In the case of journals and most databases this is generally not an issue, but in the case of ERM systems, link resolvers and a to z lists, staffing capabilities can make or break a new product. System Interoperability is also paramount to the success of any new resource. If it does not play nice with your current suite of products, you have wasted a large chunk of money on something that has very limited real world implementation potential.

Access versus ownership has become somewhat of a philosophical debate in both the library and the greater academic communities. Who should be responsible for insuring that information is preserved for all time? What types of entities need to have this access on their respective campuses and what types of entities only need to have access as needed? There are many different models of collection development options that are currently being used, a few examples follow:

1. Traditional – ownership of the physical or virtual content
2. Access only – guaranteed access to a certain portion of material for the term of subscription
3. Open Access – free access to content, but access only

4. Pay-per-view – buy it when you need it with varying degrees of archival rights

So what is the best approach? Some of us may be able to choose one option, but for most of us it is going to have to be a carefully crafted mix of all of the different options (tools) we have available to us. Murray State University, we will be moving forward with a wide range of these tools. We currently have a largely traditional model and a heavily print-based collection. We will however be moving towards a more access driven model starting with the moving the majority of our subscription base to e-only and by providing more and more robust pay-per-use options across campus.

Management and Delivery of Electronic Resources: The Problem of Ensuring Access **Geoff Timms, Mercer University**

While achieving access to electronic resources is actually a very simple concept (agree to license terms, provide IP addresses and contact information, and agree to pay for the privilege of access), the reality of ensuring access is much more complex. The management and delivery of consistent, stable access to e-resources to the right people, at the right time, in the right place, and in the manner which users desire, can be a task which occupies the time of numerous people. As we focus on satisfying the needs of the end-user, we find ourselves juggling challenges such as managing licenses, information flows, interdepartmental relationships, and a multitude of e-resource interfaces, delivery systems, and management tools.

Providing access to e-resources starts with the (signed) e-resource license, because it is there where the expectations of the institution and those of the e-resource provider meet. It is the e-resource license which dictates much of what follows as information and activities filter through the access-provision system. Preceding the commitment of both parties to a license agreement is the process of considering what our institution needs, when we need it, how we need it and for whom we need it. The meeting of our needs and the provider's offering is not always a smooth acquaintance but ultimately, when we reach an agreement, we are declaring that the negotiation is over and the license subsequently influences the scope and methods of our provision of access.

Ensuring appropriate access to electronic resources necessitates the gathering and distribution of much information. Multiple people in several departments need to know information specific to their individual functions. For example,

- Electronic Resources - needs all information if acting as the information hub
- Systems - proxying permissions/profiles, IP addresses, and entitled user populations
- Technical Services - renewal schedules, prices, and payment details
- Web Master - URLs, product descriptions, access options and status (trial/licensed)
- ILL - lending permissions
- Circulation - e-reserves permissions
- Reference - access passwords, access permissions/methods, current status (trial/licensed)
- Cataloging - adequate information to populate catalog records

On many occasions, particularly depending upon the acquisition model used, all of the information needed throughout the management system may not be readily available, specified, or clear in the license agreement. When this realization comes to light, one of two things may happen. One can pursue the vendor/consortium representative and try to obtain assurances

about specific questions, preferably before signing the license, or one can allow the specter of assumption to creep into the decision-making process and information flows. With e-resource licensing, the latter is as dangerous to an institution as a toxic pollutant is to a city's water supply.

When entering a new situation with many licenses already in existence, it may be the case that multiple sources of information exist throughout the library with regard to managing e-resources. The question that is worth asking is, "Where did this information come from and how authoritative is it?" In fact, it would be prudent to work with the following understanding:

Just because it states somewhere that something IS, it doesn't mean that it SHOULD be.
Just because something actually IS, it doesn't mean that it SHOULD be.
Just because it states somewhere that something SHOULD be, it doesn't mean that it IS.
Just because it states somewhere that something IS, it doesn't mean that it actually IS.

It must be acknowledged that because Web-based e-resources and the library staff dedicated to their management are a relatively young concept, people who had no understanding of technicalities such as IP address ranges may have been involved in establishing early e-resource subscriptions. It has surely been the experience of a number of e-resource librarians to discover that university system-wide IP address ranges have been given to a vendor when only a single campus is entitled, according to the license, to access a database. Yet over time, the understanding that the resource is university-wide may stem from the IP addresses given to the vendor rather than from the details specified in the license.

If the stream of information flowing throughout an institution is of dubious authority, then the information is of little value. It is essential, therefore, to identify and maintain authoritative, accurate sources of information and to ensure that all information flows from these sources. Additionally, it would seem logical to ensure that multiple versions of the same information do not come into existence at different points of the management system, as the danger exists that they will begin to look different over time. Therefore, a centrally-managed repository of information would be ideal. Ultimately, what IS must match what is stated as IS, which must certainly match what SHOULD be.

Yet, with the diversity of e-resource vendors and acquisition models in use, information about e-resource holdings comes from a variety of sources. Most institutions utilize e-journal agents to purchase e-journals from a multitude of publishers. Some of these agents offer us reasonably sophisticated interfaces to manage and investigate our e-journal subscriptions. This method of acquisition introduces further complexities and potential for misinformation to enter the access-provision system because information flows in two directions through a third party. We must be very careful to ensure that agents acting on our behalf communicate accurate information to those from whom we are licensing e-resources. Equally important is the assurance that the information which flows back to our institution via the agent is accurate. To what extent and regularity we test this is an institutional decision, but one to bear in mind.

While proprietary products exist to help us manage e-resource information throughout our institutions, the simple fact is that many of us cannot afford the investment and don't have the expertise to develop our own comprehensive systems. In the case of the author, most e-journal information is provided by our agent on an online interface and mutually managed, whereas database subscription details are managed in an Access database with a Google Calendar utilized to alert him to database evaluation and renewal timetables. After all, ensuring access is certainly dependent upon having the funds available come renewal time.

However we manage information, it must be accessible in a timely manner throughout our access-provision system. Take, for example, the situation faced by a reference librarian when a patron from a regional campus calls in from home to seek help with an e-journal which she cannot seem to access. The reference librarian needs to be able to access sufficient

information to establish whether patrons from that campus are entitled to access that e-journal, whether off-campus access should be possible, and which access points are available. In such a case, speed of information-access is of the essence. Suppose the reference librarian contacts the systems librarian to initiate an investigation into the correct functioning of the proxy server for the journal title in question. The systems librarian needs to know, at a minimum, if that title should even be proxied and what the correct URL is for access.

As hard as we may try to ensure access to e-resources, the unexpected happens. Vendors accidentally lose the IP ranges we have logged with them, Information Technology departments reassign IP addresses, vendors change URLs or add sub-domains to their products with URLs for which our proxy servers do not account, and subject liaisons or teaching faculty occasionally capture non-persistent URLs and use them in online guides. In cases such as this, and the resolution thereof, information needs to flow to us from our patrons. Typically, those who use our e-resources have little understanding of what is required to make access happen. They are, therefore, ill-equipped to provide us with the information needed to diagnose the problems they are experiencing. Thus, as managers of e-resources, we must take the initiative to guide users to provide us with the information we need, either directly through a service desk or indirectly such as through online forms where specific problem-related information is sought.

The author developed an online self-help Web page for troubleshooting elementary problems with access to e-resources and an online form for reporting more complex issues. The online form has been particularly useful in providing essential information to help with timely resolution of access problems, especially when the problem has occurred late at night and most library staff members are not available. In designing such a tool, a balance must be struck between ease of use and provision of sufficient information to troubleshoot the problem. Only essential information is sought, selectable choices are offered wherever possible, and the user is given the opportunity to describe the problem in his or her own words. Looking at numerous equivalent forms on other Web sites played an important role in the design of the form currently in use.

The flow of information in an institution can be helped or hindered by interpersonal relationships. In the detail and technology-focused realm of e-resource management, relationships can easily be neglected. People introduce complexities such as emotion, purpose, priorities, and urgency to the equation, whereas e-resources are inherently dispassionate. Managing relationships internal and external to the library, therefore, is an essential component to ensuring access to e-resources. Mutual respect and understanding, time invested in the relationship, and a collaborative approach to achieving a common goal can be the key to the successful achievement and maintenance of e-resource access.

It is easy to perceive the vendor-library relationship as a simple purchase transaction and nothing more. Acknowledging that vendor and library attitudes towards each other are varied, it follows that there are healthy and constructive attitudes which can be adopted. As librarians, we hope or expect that e-resource vendors understand the unique situations in which we find ourselves as clients and that they will help us achieve our purposes. Similarly, vendors expect that as librarians we will understand their needs, requirements, and obligations. Just as a license agreement represents mutual affirmation of a legal relationship, the informal relationship existing between the representatives of both vendors and libraries can foster mutual respect and cooperation.

It has been the author's experience that when the representatives of the vendor and the library seek to understand and support each other in the context of our organizational peculiarities and unique purposes, the relationship is more fruitful and mutually beneficial. Just as librarians can offer time to evaluate and assist with the improvement of an e-resource interface or take time to help the vendor understand the structure of our institutions, the vendor can seek to better customize e-resource delivery to institutions with complex structures or adapt

to academic institutions' cash-flow challenges in a tight economy. One of the greatest tests of a vendor's responsiveness comes during an interruption to e-resource access. The smoothest and most efficient resolutions have been experienced when dealing with vendors where amicable working relationships with key individuals had already been established. In these cases, the process has seemed much like partners working towards a shared goal.

Internally, people from different departments who rarely collaborate can be thrown together with the challenge of resolving an access problem. Departmental subcultures may have unwritten rules and unspoken expectations which develop from day to day interaction and people from outside the subculture can easily cross unseen boundaries, unaware. People who have little or no understanding of others' roles may try to communicate information about which they have little understanding or interest when establishing initial access to an e-resource. A colleague can unknowingly infuriate another who faces a looming deadline for an important project by insisting that a mundane and unimportant e-resource access adjustment be addressed with utmost expedition. As individual components in a complex mechanism for delivering e-resources, the value of collegial diplomacy, mutual respect, and making an effort to understand each others' role in the process, can be invaluable.

One of the more challenging relationships to develop and maintain is that with university-level information technology and networking personnel. They are highly focused on a very technical environment which is substantially larger than the library; indeed the library is but a small fish in a large pond. The author's experience is that information technology personnel may be very unaware of the unique challenges and problems associated with the library's use of university networks. For example, recently the IP addresses of the DNS server at the author's institution were changed without notification from IT, causing the EZProxy server to return errors associated with connecting to resources by domain name look-up. Much inconvenience to end-users could have been avoided if a simple information flow had occurred. Not three weeks later, network security protocols were introduced on the student network, resulting in blocked access to all proxied resources. Again, a preemptive conversation could have spared numerous students from experiencing access problems. For these reasons, a current high priority for the author is to develop working relationships with IT personnel in order to be included in the information loop. A first step in that direction is being sure to provide them with timely information concerning observed network problems and, essentially, helping them to be effective. To foster the understanding that we are partners in a common goal would be a worthy undertaking.

The most transient relationships, but certainly not the least important, are those that we have with the users of e-resources. Aside from offering training in how to use e-resources as public services staff, we may never hear from our users unless there is a problem. When there is a problem, we may perceive it as an inconvenience, a task to undertake, or an issue to correct. The user, however, may view the access problem as a crisis. The desperate student pulling an all-nighter a day or two before a paper is due is likely to be mortified at the inaccessibility of a key e-resource (the author knows, from his own experience!). These users are often task-oriented and focused on the short-term, i.e. the achievement of that task. Swift resolution is the first priority, but customer service is also an expectation. By providing first class responsiveness, understanding, and diplomacy in resolving access problems, we may be investing in an important information network. We often don't know that something is broken until somebody tells us. By serving our users well, we can teach them how to help us to help them. How many times do users silently seethe when a database is down? Do we only hear one time in ten when there is a problem? If we can encourage communication, founded in mutual understanding, we can ultimately become more effective in delivering and restoring access to e-resources.

While information flows and relationships are fundamental to enabling access to happen in all the ways expected of us by our users, it is our management of interfaces and delivery

systems by which our users most often judge us. Most of what has been discussed to this point is unseen by the end-user. It strongly influences, however, that which is seen and utilized. Diverse users seek access to e-resources in a number of ways. Perhaps more advanced users frequent specific databases and e-journals, accessing them through their own interfaces. Others try the federated search to trawl everything simultaneously. One might use the state-wide virtual library interface (GALILEO in the case of us fortunate Georgians) whereas another might browse the database listings on the library Web site. Some users seek e-journals by searching e-journal titles for a specific word and others believe sincerely that Google Scholar is the one tool needed to get the job done.

In listing these different methods of approaching research, multiple systems which must be managed are identified. Individual e-resource product interfaces, federated search engines, database profiles on a consortium/state-wide interface, library Web pages, Subject Librarian Web pages, link resolvers, A to Z e-Journal listings, and library-specific Google Scholar profiles all require careful management. For off-campus access, proxy servers must also be managed, including management of site security certificates which eliminate browser error messages when connecting to secure Web sites. Some institutions manage all of these systems for themselves, whereas others benefit from state-wide library assistance with management of certain elements. Either way, users expect each of these utilities to work correctly at the time they use them and they expect the information contained therein to be correct and consistent. Systems failures of any of these resources aside, the correct functioning of each is almost entirely dependent upon the accuracy of the information or data with which they are populated. A notable problem is that certain types of information are temporary. Take, for example, an e-journal to which the institution has rolling access of a ten-year block. Populating an A to Z e-journal listing with specific start and end dates requires regular maintenance of that information, whereas use of a well-worded statement to communicate that access is for the current ten years only, is correct indefinitely.

In order to ensure that no step is missed, it is well worth producing a checklist of activities to be undertaken in making a resource accessible. It can be surprising how many procedures must be completed to provide access to a new database at all the entry points used by our patrons. The temptation exists to work from memory, but in the fast-paced environments in which we work, interruptions can cause steps to be forgotten or left incomplete. Good practice necessitates documenting procedures so that colleagues, or those who follow in our positions, can take the reins without having to wade upstream in the information flow as we perhaps once did.

As Subject Librarians develop online subject guides and tutorials, the number of e-resource URLs being spread around a Web site increases over time. When a vendor changes the URL to a resource, or a proxy server prefix must be added, each incidence of that URL must be changed. One solution to that challenge which the author would like to implement is the use of persistent links to e-resources which point to a single location where the correct URL is stored. This could be achieved with a MySQL database, for example, where a record contains the latest URL (diligently kept up to date in that one location) and is referenced by the record ID number wherever a link to that e-resource occurs.

A broader challenge faced in providing access to e-resources is achieving the balance between organizational capacity and meeting users' expectations. Is it better to provide every possible point of access but struggle to maintain them well, or is it more prudent to select, by priority, a manageable number of access points to manage? Each institution must address this for itself, but it does require being honest. The author would much rather do less, but do it well, than do much with mediocre standards. The reasoning for this stance is that if we provide access points which function badly, users will eventually give up on them. In being ambitious beyond our means, the potential exists to hinder people in their quest for information. In Georgia, libraries are fortunate to benefit from GALILEO's service in the management of a

federated search utility and a link resolver on their behalf. The management of the information required to make those services function is handled by specialist personnel outside of individual libraries. This is essential for institutions which don't have the capacity to devote personnel to those functions. Institutions, then, simply ensure that GALILEO staff are provided with accurate information and enjoy the benefit of their expertise.

To tackle the issue of organizational capacity, the author's institution, like many others, is trying to adapt to the changing world of serial resources as they steadily move from print to electronic. Institutional restructuring is often a challenging, even painful process, but essential in staying relevant. Individuals may need retraining, responsibilities must be redefined, and new collaborations will be forged. To achieve this, current information flows and e-resource management and access tools are being reviewed and the division of responsibility according to capacity, function, and expertise is being planned. While the management of each interface requires a little training and ongoing time commitments, it is not an overwhelming challenge if tackled in manageable chunks. Real difficulties can occur when individuals are overloaded with responsibilities and find themselves juggling too many to fulfill any of them well. This is where mistakes happen, details are overlooked, and information can become polluted with errors.

To conclude, then, e-resource management and the problem of ensuring access is not completely about technical expertise and the management of tools and utilities, although that is an essential part of the equation. The essence of being effective in this context is in the careful creation, management, protection, and distribution of accurate information throughout the network of people who work to provide access to e-resources. We must then enable and equip ourselves to use that information well in managing the points of access with which our users interact. In balancing the technical and human elements of e-resource management and use, the system in which we operate has the potential to function smoothly and effectively.

Education and Training for Electronic Resource Librarians

George Stachokas, Indiana State University

The position of electronic resources librarian is relatively new and some already question whether it will last. Is the position a type of acquisitions librarian? Or is it more? (Ginanni, K., Davis, S., & Arthur, M., 2006). Position descriptions and precise responsibilities for electronic resources librarians do vary among institutions. While it is impossible to predict how long the position title of electronic resources librarian will last, one can safely argue that the fundamental purpose of the work of electronic resources librarians, the provision of access to electronic information, is here to stay. Information saturates our lives in the 21st Century and the amount of information will most likely only increase. The need to obtain electronic information from a wide variety of sources is a given and the Library will have to provide access (Dastgerdi, A., 2009) as most individuals cannot be expected to acquire, organize, and troubleshoot access to electronic information on their own. Electronic resources librarians play a critical role in this process, but are most electronic resources librarians receiving appropriate training? What kind of formal academic training is available before professional work begins? What kind of educational resources are available for these specialized librarians to maintain and improve their skills after they get the job?

Most graduate programs in library and information science (LIS) require their students to develop at least a minimal level of information literacy and familiarity with commonly used technology, but because everything that electronic resources librarians do is directly dependent on technology, it can be argued that the typical electronic resources librarian, if there is a such a thing, should have more IT skills than the librarians working in many other areas of specialization such as circulation or reference. Courses on web design, network systems, and the management of databases are very useful. The University of Illinois at Urbana-Champaign, Indiana University, the University of North Carolina at Chapel Hill, Syracuse, the University of

Washington, among others, do offer many courses to help librarians become conversant in the technology required for their future work. Most of these courses were developed to serve the needs of other specialized librarians such as systems librarians, but future electronic resources librarians also benefit from these offerings while pursuing their degrees.

Electronic resources librarians do benefit from courses in traditional technical services areas, but only some courses address the specific needs of future electronic resources librarians (Sutton, S. , 2009). Courses on collection development usually include information about serials in print and electronic format, databases, and other continuing resources, but how to gather and evaluate usage statistics may not be sufficiently addressed. Cataloging and metadata courses do address electronic information, but may not cover automated cataloging or how to manage and correct MARC records in bulk imports. Courses on acquisitions may not address the complexity of electronic license agreements. A recent study published in the journal *Collection Management* in 2007 noted that while most LIS programs addressed many needs of Electronic Resources Librarians, there were notable deficiencies in electronic resources management and licensing (Bradford, M. L., Dehmlow, M., Guimaraes, A., Ladd, M., Loghry, P. & Simons, M. 2007). Unlike traditional acquisitions, each electronic resources acquisition creates a new vendor relationship for the duration of the subscription that may require consultation with the vendor for setup, troubleshooting, and general technical support. Acquiring a database is far more complex than purchasing a book or a run of print serials.

Jill E. Grogg of the University of Alabama has written about the need for specific courses in LIS programs to prepare electronic resources librarians (Grogg, 2008). Grogg has mentioned efforts at the University of Hawaii and the University of Illinois at Urbana-Champaign. The University of Hawaii at Manoa does now offer a course in serials and electronic resources librarianship taught by Lori Ann Saeki and Amy Carlson (Saeki, L. & Carlson, A., 2008). This course addresses budgeting, licensing, acquisitions and the management of both resources and staff. Other courses at the University of Hawaii such as "Copyright and Libraries" also explicitly address the complexity of electronic license agreements in terms of the legality of copyright law and fair use, but also the economics of licensing (Perushek, D.E., 2007). The instructor, D.E. Perushek is not above teaching such practical issues as how to identify adverse clauses in contracts and how to make sure that perpetual access rights and other important terms are included. Some courses on copyright address the topic at such a highly theoretical level, to be generous, or are simply so vague that most offer little or no practical benefit to electronic resources librarians. These are the kind of courses, specifically targeted for electronic resources management, that are desperately needed in many LIS programs.

Regardless of the specific job titles, organizational designations, or even course titles, LIS programs need to start adjusting their curriculum based on broad trends in patron needs and user behavior in the past twenty years. Most patrons prefer electronic resources to other sources of information due to the prevalence of the internet and the convenience of use. Vendors prefer the electronic format for many reasons, not least of which are reductions in production and transportation costs. The U.S. Government committed to electronic resources many years ago and many other governments have done so as well. This general trend is irreversible. The LIS curriculum needs to reflect that the electronic format is no longer the alternative, but the dominant paradigm. Courses that teach both the theory and practice of electronic resources licensing and management should be included in all LIS programs, but all LIS education needs to reflect the fact that electronic resources are the core of the contemporary academic library's collection.

Even when well prepared by focused academic study within their LIS program, future Electronic resources librarians should consider taking additional courses in other disciplines as appropriate. Some courses in computer science and IT, as well as some social science courses could provide useful technical skills and inform future librarians on how best to serve users. Courses in business and project management could be helpful. Even courses in philosophy that

address relevant contemporary issues such as the digital divide (Plumb, T. K., 2007) or how to promote reflection in an age of instant gratification would benefit electronic resources Librarians. Some jobs within academic libraries such as special collections that are recognized as being inherently complex sometimes require a second graduate degree and while electronic resources is not even viewed in that light, specialists in this critical area probably should be some of the most highly educated and mentally flexible librarians on staff.

Given the dynamic nature of their jobs, electronic resources librarians must commit to continuing education. A robust electronic collection will require that one become familiar with innumerable administrative Web sites for full text databases, e-serials, and e-books. One has to learn the quirks of the various products made accessible to users, not to mention specialized software, and other tools used primarily by library staff. It is never enough simply to order a set of resources and post these to the Web; one has to consider how the library's electronic resources interact with other tools used by teaching faculty and students such as Blackboard. One also has to keep abreast of changes in copyright law and other rules that pertain to electronic license agreements. It almost goes without saying that a busy electronic resources librarian must try to keep a good sense of general trends in web design, resource delivery platforms, and management tools such as ERM.

While some librarians have the luxury of ignoring training sessions provided by vendors about resource specific or proprietary tools, the electronic resources librarian does not. Those who hold this position need to know how to gather usage statistics or access specific administration consoles. Vendors, especially their technical support staff, have quietly joined the ranks of the contemporary library as their work becomes ever more integrated with that of library staff. The electronic resources librarian must also know the general capabilities of specific vendors and be familiar with their workflows in order to accomplish the library's work of providing information services. Continuing education options offered by LIS programs in formal academic settings, online training sessions offered by consortia, and other training opportunities offered by professional associations need to be taken advantage of whenever possible. While it is a cliché, electronic resources librarians also need to review the literature relevant to their area of specialization and attend conferences. Consultation with one's peers is also a necessity for keeping track of trends and new developments.

To conclude, higher education in library and information science needs to do more to help prepare future electronic resources librarians for the complex challenges of their work. Electronic resources librarians should receive formal education in critical functions of electronic resources acquisitions, cataloging (broadly conceived), and technical support. This will require a commitment on the part of major LIS program so create new designated academic courses for this purpose. Electronic resources librarians also need to continue to use every opportunity to learn more on their own. Finally, electronic resources librarians need to learn more from each other, work together, and take a stronger hand in both professional organizations and less formal groups to ensure that the educational needs of future generations of specialized librarians and information professionals are well supported.

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