Facing Contemporary Challenges in Librarianship
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Introduction

This is the second volume of Elsevier’s Library Learning Trends series. Elsevier Science & Technology Books is providing this series of free digital volumes to support and encourage learning and development across the sciences. Each title includes content excerpts focused on a central theme to give the reader an introduction to new ideas and information on that topic. Thank you for being a part of the Elsevier community!

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9.1 Introduction

In 2005, Wysock from the Wall Street Journal reported that professors at a Drexel University campus forum in May of 2005 complained about funding cuts at the library. President Constantine Papadakis did not apologize for the belt-tightening. Papadakis told them he’d prefer to have an all-digital library with no books at all.

Some faculty members and students were concerned. An architecture professor said print is essential to students and scholars in that field. Another professor compared the future Drexel library to that of a community college, saying that it was impossible for a university president to propose a bookless library. Dr. Papadakis says he was overstating. Spending too heavily on books, periodicals, and the buildings that house them is a waste in the digital era, Papadakis said. The discussion regarding marketing libraries and librarians has never been of greater importance. If the largest and most prestigious of universities is considering the demise of a library’s print collection and as a physical space, so too will other institutions, until the academic library becomes extinct.

9.2 The time is now. Marketing the profession: If we wait it will be too late

The typewriter was first conceptualized in 1714 by Henry Mill, an Englishman who filed a patent for his idea. However, the first typewriter, as we know it, emerged in 1808, designed by the Italian Pellegrino Turry for his blind friend.

The Sholes and Glidden typewriter appeared in America in 1874, almost 100 years prior to the information explosion in late twentieth century. Let’s consider the effective death of the once innovative typewriter. The QWERTY keyboard survived, but it transferred to the electronic world of personal computing, via Windows or Mac. Typewriters themselves are relics: almost extinct. The PC and Mac, successive revolutionary devices, increased exponentially the speed by which the written word can be created and disseminated.

This is only one early twentieth century invention that sparked an information age. Well, librarians adapted to computers, and even thrived as increased in-house efficiencies resulted in better and more innovative services. The next generation of revolutionary devices included the smart phone, tablets, and smart-boards. Information from Google, Google Scholar, Facebook, Twitter, and other sources opened up the flow of information to speeds our ancestors would never comprehend. And in a librarian’s
imagination exists hope for hologram-like library computer banks, which co-exist along side interactive library spaces that house after-school care programs, discussion groups, political functions, and banquets. The twenty-first century librarian must be imaginative and participate in discussions. This is the future of the profession. How will librarians of the twenty-first century adapt? What will they become? Let’s review ways we have survived in the past to guide us to our sustained existence, thriving as the core of academic institutions, as their heart, mind, and spirit.

9.3 Future of marketing libraries and the profession—If we wait, it will be too late

The most recent threat to the profession could be Helpouts by Google. The Google About Helpouts section describes this service as providing live video-based help anytime from experts. Of the experts Google lists, librarians are blatantly left out. “Experts,” it says, includes teachers, counselors, doctors, personal trainers, enthusiasts, and more. Where are we in this equation? And why is Google leading the charge?

There are several productive means by which we can promote our own profession, but to do so without developing a marketing plan will only sell us short and, in the end, be counterproductive. We can no longer rely on promotional gimmicks alone. We know the time to market ourselves is now, and we need to understand our own profession well enough to transfer the respect we have for our own to the general academic community and furthermore to society in general.

How will we market our profession? Think TIPR. The past chapters discussed the importance of thinking, investigate, planning, and reacting. This applies equally to the marketing plan for our profession as a whole. This chapter deals specifically with this roadmap. To think is to work on our mission, where we are, and our vision, where we want to be; to think about our past, our present, and our future. Investigate involves our data assessments, in which we uncover what our patrons and the general community think we do, versus what we do. In this research, one may gather a better understanding of what the community actually wants us to do. Librarians should plan a course of action, before reacting. In other words, do not skip steps of the process and move directly to promotions. Understand the data first. Form partnerships, determine which resources or services to create, and improve, then promote. Ask, what technologies can we use? Become engaged with the external constituents, the community, as well as with the internal constituents, the librarians. We are customers of one another. We need to TIPR together. Think, Investigate, Plan, React.

The continuity of the profession and perhaps ultimately the existence of academic libraries rely on how well librarians educate our consumers about what we offer to students’ academic lives. If we librarians develop a professional image, we will be taken seriously. Librarians need to heed the warning signs. Academic libraries are not safe from downsizing, staff eliminations, or shrinking budgets. If librarians wait, it will be too late.
Due to the explosion in technology, the Internet allows access to an unending supply of information. Many researchers turn to Google to not only begin the research process, but also to end it as well. Librarians face a rise in unmitigated research transactions in the academic environment. If we don’t market the librarian as the information provider on campus, the community will never understand why they need such expertise. If patrons do not interact with a skilled librarian, then many will never value the library and the librarian as integral to their academic lives.

To begin, let’s examine what we do well. Then we will discuss how to create a professional marketing plan for the profession. Here are concepts to examine:

- Customer service is a librarian specialty. It’s our niche. It’s what sets us apart from other information generators, including such services as Google Helpouts and Google Scholar.
- Develop partnerships across campus.
- Get involved in campus leadership activities. Outreach by developing the librarian’s role on campus. Consider co-publishing with faculty, for example.
- Create a modern professional definition of our role developed through a SWOT analysis, incorporating a mission statement and a vision statement.
- Librarians need to gather data regarding our current professional image on our individual campuses.
- Create and implement the marketing plan. The plan librarians construct should begin using the same steps employed when creating a marketing plan for the library.

According to Debbi Smith in *Strategic Marketing of Library Resources and Services: College and Undergraduate Libraries*,

> “Whether physical or virtual, an academic library’s collection and services are relevant only to the extent that they are used by their intended audiences. Use of collection and services is not only a reflection of how well they have been developed to meet the mission and vision of the parent university, the academic curriculum, and faculty research needs. It is also a result of how well-informed the community is about specific resources offered by the library. Our profession is in constant flux as resources continue to move from traditional physical formats to online counterparts and as librarians mediate access to rather than provide ownership of a resource. The profession has had to adjust to libraries no longer being the only information game in town with a captive audience; we face competition from resources that are easily accessed online without our assistance through Google and other search engines or Web sites.” (2011, p. 333).

Not only has access to information exploded, so have the ways we communicate. In the past, we only had to worry about who we need to reach, how to reach them, and what to say (Mathews, 2009). There were limited venues for such communications. In marketing the library of today, we have far greater resources at our disposal. Media has exploded in our twenty-first century information age. Now we have to decide what messages to send to which user groups using a multitude of communications methods. Although traditional print and media messages via TV, radio, campus billboards, and effective signage are still useful, we must also now transmit promotional messages via online methods:

- Facebook
- Twitter
9.4 Customer service

Librarians know that patrons enjoy many benefits from using library resources. When patrons use the services, librarians can easily demonstrate their advantage over the Internet. We provide outstanding customer services to patrons, in ways that the Internet cannot. If a patron has a question of a library resources, data bit, or origin, they can find help at the library. If they have a Google question, experience technical issues, or just don’t understand what they are reading, they can call a librarian. Google representatives do not generally assist their users with technical, interpretational, or access related questions. However, Google Helpouts may be a competitor. Helpouts currently offers point of need assist to the user. It is currently the bigger threat to our profession (SWOT).

In “Reflections on Ranganathan’s Five Laws of Library science,” Leiter (2003) said that people who have reflected on these laws or who are just now reading them “will have their interest rekindled and, in the process, have their professional enthusiasm and inspiration rejuvenated as well” (p. 412). He continues to say that if we lose focus on our profession customer service skills, we will also lose enthusiasm, creativity, and our “professional soul” (p. 412). “Our professional orientation is toward service—always—and as we strive for (and often achieve) excellence in service, it is not surprising that we are taken for granted!” (p. 412).

Customer service is key to the future of academic libraries, and, therefore, the future of academic librarianship. What sets us apart from other organizations is customer service. Patrons want answers. When they work with a librarian, they see librarians verify answers, check sources, and explain results. They expect the same from Google. They do not often understand, again, the higher level of customer service they receive at the library. Whereas Google retrieves results, a librarians retrieves, interprets, and organizes information. We construct, instruct, and deconstruct. Patrons who go to Google and type in a search term do not expect Google to explain how the information was generated. They only expect good results. If we can impart the importance of data verification to patrons, they will learn to question their results in the spirit of intellectual inquisition. Information literacy is our catch phrase, but without the interaction between librarian and patron, the analysis might be forgotten. The patron might assume all information to be correct.

Customer service makes our profession unique in the information age. It is our “gig.” Let’s promote that! In “The Visible Librarian: Asserting your value with marketing and advocacy,” author Siess (2003) says, “Our customers have choices in the acquisition of information and the library or information center may not the first
choice” (p. 3). Our potential library constituents might not know why librarians exist or what we do. Therefore they don’t know why they need us. The Internet has it all, they believe, and these user groups can simply choose to completely ignore us.

It’s the people who staff the library who make the library experience memorable. Stephen Abram (1996, p. 4) said “the marketing activity of delivering effective information while highlighting our personal qualities and professional attitudes is key to promoting ourselves.” Pave the way with good customer service—wrap up a transaction by giving a patron a memorable experience. The library experience should be all about the patron. Providing this level of service will promote positivity for our profession. Library service is all about what the patron needs, wants, and uses. We should develop a better understanding of this and emphasize this, instead of investing our energies trying to promote random, untargeted or not completely thought out offerings. We cannot expect patrons to use what we offer if it is not in fact what they want or need, just because the services exist.

Perhaps an even more egregious offense is providing poor service. When student complain to their professors that, “My interlibrary loan articles never arrive in time,” or “The library never has the books I need,” we need to take heed. If they say “I can never find anyone to help me,” it’s time to evaluate what we do. The preceding comments are significant barriers to improving the image of the library. If the comments can be overheard in the cafeterias and professors’ offices across college campuses nationwide, then our profession will suffer. When the profession suffers so do the librarians. Librarians need to be a part of this conversation, rectifying unease, and gaining a better understanding of our student issues. That is customer service.

Customer service is a promotional method, just like giving away free pencils. It is a conscious effort that we make to enhance our image on campus. Give good service and the word will spread from one library patron to another, and from one library user to a nonuser! Customers tend to varying degrees of satisfaction. While some sing our praises, some will never be satisfied, no matter what we do. If the very satisfied and the very unsatisfied are the outlying user groups, then direct efforts toward the middle of the road patrons.

Delivering good customer service affects our library users and nonusers alike. We have potential customers: those who really have not yet used our resources or services. How we serve them is different from how we serve our user base. The problem is, when they initially present themselves, we don’t recognize them as belonging in one group or the other. We must strive to provide the best possible service to each customer, regardless of user status. Remember, when we interact with patrons, we can’t be certain which group they fall into. Is this a new user, one who was just before considered a nonuser? When we reach out to users, we can ask their status. Have they used a database before, checked out a book before, etc? For examples, we can poll them individually as they approach. Ask “have you…”

- used the library before to...
- checked out a book
- used a database
- gotten the full text of an article
- printed a paper, etc.
Ask a question that helps gauge their status, so to better customize their experience. List several of the services students most often use. Then ask the harder questions, the customer-service questions, like: Have you interacted with an ILL staff member/consulted with a librarian/attended a research skills class? Just asking these questions helps deliver a more meaningful experience for the students, the faculty, and the librarian providing the service.

Try to understand the patron’s preferences. Many do not know how to find a book in the stacks, but most times, we never even bother to ask. Let’s examine an example experience and a barrier to good customer service. If customers attempt to access full text from a library database, can they retrieve it unmitigated, or do they need to interact with a person? Do they know that librarians encourage students to seek assistance from library staff? We run the risk of students engaging in unmitigated interactions, resulting in resources not connecting properly, or not seeming available; in these cases, a student may become confused, give up, use a Web page answer instead, and perhaps fail a paper for using the wrong kind of resource. It is not good customer service to tell a student that what he or she wants is available—effectively, it is not if it is too hard to find on a platform that users feel should be an unmitigated service model. Library resources should be more intuitive to use!

If it is primarily those who staff the library who can make the library experience positively memorable, then library staff have to provide the best service each and every time a patron is served. This includes the unmitigated transactions where the patron uses the services, even if there is little interpersonal contact between the patron and the librarian. Librarians in the past navigated physical library stacks and resources to provide answers, research articles, facts, and information leads. Now the Internet can easily remove librarians from the positive library experience. We have come to develop library tools that mimic the ease of the Internet, for example discovery tools and mobile-enabled Web sites. And we assume students will use them and like them. Do they? Is it easy to do? Have we taken ourselves out of the equation to the extent that students don’t even contemplate whether librarians have any special consultative skills to offer them? We need to promote ourselves.

9.5 Mission, vision, and SWOT analysis (Think)

Self-promotion does not equal self-glorification. It isn’t even entirely about self-preservation. This is about preserving the profession by creating an awareness of how we work, how we are managed, and how librarians and libraries will grow to better meet users’ needs in the twenty-first century.

To market the profession, we must follow the same process we follow in marketing the library. It begins with writing a mission and a vision statement. Marketing the profession also involves understanding our SWOT. It involves creating a plan of action, and it needs to be a universally accepted plan, one that the profession accepts and supports. Who then leads this charge? The librarians of today can direct the way, protecting future librarians. The librarians of today can write the mission, the vision,
the SWOT, and then seek institutional support, to implement and then to rally increased professional esteem nationwide; indeed, worldwide. Since all libraries and librarians are different, let’s begin on a smaller scale, marketing our libraries and then our profession to our academic constituents. The marketing plan can be customized by individual libraries and librarians, to reflect the unique mission each serves and the unique services each offers.

To contemplate the mission of a librarian we must first open discussions regarding what we do in the twenty-first century library. A librarian teaches information literacy skills. We assist researchers as they sift through a myriad of information. We categorize information. We design information retrieval methods. We classify data. We design research methods. Our vision is being redefined at the moment. In October, 2013, the American Library Association received a grant to create the Center for the Future of Libraries. See http://www.ala.org/transforminglibraries/future for more information.

9.6 Assessment and planning (TIPR: Investigate and plan)

Always assess before planning. Improve the image of both librarians and libraries through the marketing plan: that is the charge of the marketing team. As such, the project control principles can be used to select a team, define the goals, bring on supporters, and schedule tasks and deadline dates. Follow the same steps discussed within this text regarding the library’s marketing plan. In doing so, focus on the data. Be sure to conduct literature reviews, surveys, focus groups, and individual interviews. Data leads to effective action. In creating the marketing plan for the profession, let’s not forget to promote!

9.7 Form partnerships (TIPR: React)

Librarians can create consumers who are loyal to our service accustomed to the accuracy of our information. How do we attract more users? To save the profession, we must begin to forge new partnerships with students, faculty, campus organizations and service departments, and the general community. To do so we can, for example:

- Enlist the business world by working with interns, or creating a service hub for the business men and women of the community to enjoy.
- When conducting surveys or focus groups, enlist the assistance of grad students on campus.
- Reach out to the tutoring center and partner with them to reach more students.
- Remember special interest groups, such as student athletes, and create programs where they have an opportunity to enjoy special access to assisted library research and study skills sessions.
- Create faculty alliances by developing faculty centers, serving on faculty senates, and collaborating on research.
- Attend special events such as open houses, poetry readings, sporting events, and receptions.

New partnerships are formed organically. Congratulations for capturing new library user-groups!
According to Schuman (1990, p. 88), public relations are key to promoting the librarian. “It means coalition building, it means full participation in the intellectual and political life of campus and the community.” She believes many people in the community are shocked to find out that librarians have Master’s degrees, rather they generally hold librarians to an image reflected in appearances or popular culture. Schuman said “The image we worry about most—that of the middle-aged spinster librarian—is basically irrelevant and unimportant. What is important is the view of the library as foreboding, boring, complicated, largely inaccessible, or worse, irrelevant.” How true is this concern today? Answer that question by surveying librarians as well as library constituents. She suggests we focus on how useful, necessary, and important we are to their education and research. We can strive to be considered the disseminators of information, instead of the guardians of knowledge.

We must use marketing principles to educate users about what we can do for them. First, let’s gather data on what they want us to do, then do everything possible to project a more positive image. We are professionals, like doctors and nurses, who have dedicated years of coursework to become such. We strive for continual improvement and education. Professionals create partnerships with their client base. Academic librarians can partner not only with students, but with student groups, such as a class of psychology students who all seek memoirs to write a course paper. We can also partner also with open house coordinators, residence hall directors, student government groups, and faculty, for example.

9.8 Promote the five W’s

Good customer service creates converts. Those students and faculty become our allies and partners on campus. Each experience with the library staff or facilities, whether on-campus or off-campus, needs to be a positive interaction. Barriers to good service must to be examined and studied. What impacts positivity? It’s easy for the librarian to answer a question, perhaps obtaining a full-text article for the student. But why must the student need to ask for help in order to have a positive experience? Accessing full text for a library database is just straight-up difficult for the average patron. How hard must we actually make it before we realize they are giving up on us? They will move on to other resources.

Instead of reaching out for assistance, students are reaching for an easy to access Internet Web. Those who use library services such as reference or circulation desk assistance know what they need to ask. Users outside of this category normally do not know:

- Who[m] should they ask a question?
- What questions should they ask?
- Why are they asking a question?
- When should they ask?
- Where they should go to ask the question?

The secret is to convert nonusers to users using the principles of the five W’s as part of the marketing plan. If good customer service, characterized by accuracy, speed,
reliability, and accessibility, are a librarian’s niche, then we must use the theory of the five W’s to advertise to nonusers. For example, if the survey data shows users do not know what they should be asking, or whom to ask, the librarians can promote services through the use of educational flyers, school newspaper interviews, and in-library instruction sessions. In each forum, the librarians can specifically describe library services.

Library patrons really don’t want to need help. They want the library to be as easy to use as the Internet so they can be independent researchers. We currently make them jump through three or four library platforms: sometimes from an Ebscohost interface, through to a ProQuest or Science Direct interface, through Serials Solutions or Link Source, to an abstract that may or may not have a link to full text somewhere on the page. Also, some results guide users to a library catalog record that merely indicates we have the needed item and that it’s bound, on fiche, or in current periodicals. None of this makes sense to a novice. It might not even make sense to a seasoned library user. Library instruction has always been the librarian’s answer to the problems of complexity in our systems. Perhaps the answer should be to spend more time on creating systems that are intuitive for researchers to use.

The most satisfied user-groups are likely the ones who have used an intervention method. They exhibit at least one competency from the five W’s. A savvy professor or other satisfied classmate became a friend of library services because he or she knew whom or what to ask in time to complete an assignment. Students who are knowledgeable about the five W’s may use a productive communication system, such as calling on the phone if off campus, or sending an email or text message. If these students are on campus, they stop by the desk for consultation regarding their complex research needs. In this positive experience, they encouraged other students to use library services and in effect, “paid it forward.” Word of mouth is a fantastic method to increase a customer base. Good service breeds good experiences. On the flip side, customers will most often, when dissatisfied, complain to other customers, both users and nonusers.

9.9 Conclusion

The time is now. Marketing the profession is as important as marketing the library where you work. Although one helps improve the general image of the other, make a conscientious effort to consider and plan a marketing initiative for your librarians. Seek the buy-in that is necessary to make the plan more successful. The more librarians on board the better the team can steer the ship.

Librarians must become a team of engaged professionals dedicated to marketing not only the libraries where they work, but the profession in which they serve. As the twenty-first century presents challenges and opportunities, it impacts the life of our profession and our professional spaces. Take the methods discussed, to take our marketing plan and implementation process, to understand our own opportunities by using the heretofore systematic process of marketing in the realm of librarianship. Such opportunities as providing excellent customer service, becoming partners with other campus constituents, becoming a research expert and respected scholar, and using marketing principles to use a data driven approach to improve our image.
9.10 Exercises

1. Complete the following phrase: The mission of a librarian is to...

2. Complete the following phrase: Our vision for the future is to...

3. SWOT—add to the following example:

<table>
<thead>
<tr>
<th>Internal forces</th>
<th>External forces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengths</td>
<td>Opportunities</td>
</tr>
<tr>
<td>• Customer service oriented</td>
<td>• Redesign interfaces so tools are easier to use</td>
</tr>
<tr>
<td>• Understand accuracy of information</td>
<td>• Market profession to improve image in the academic world and larger society</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>Threats</td>
</tr>
<tr>
<td>• Misunderstood professionally</td>
<td>• Librarian-centric</td>
</tr>
<tr>
<td>• Librarian-centric tools and services</td>
<td>• Google Scholar and the rise of other easy to use Internet resources</td>
</tr>
</tbody>
</table>

4. This sample SWOT chart can be constructed by individual libraries. Each can look unique, but the skeleton will be the same. In what ways do you think the SWOT will remain consistent across all libraries?

5. List five questions to include in a faculty assessment survey of the library. List five questions to include on a student survey.

References


2.1 Authorization

You have a boss.

Hierarchical management structures ensure that most librarians who are responsible for developing their libraries’ disaster plans have superiors to whom they are obliged to report. A public library director will report to a board or city council; department heads will report to their director; front-line librarians will report to their department heads and clericals will report to supervisors. Public library boards are frequently required to inform municipal authorities of their library’s disaster plan. University library directors will update their respective governing bodies – senates, for example – of their progress in developing plans. If you have been charged with the responsibility of developing a disaster plan, you will probably have a person or group of people authorizing, overseeing and evaluating your work.

If you are a planning consultant, you will have a client contact such as the library director to whom you will submit your drafts and finished documents. The same is true for a planner employed by a city who develops disaster plans for different kinds of city-owned institutions. That planner will submit his or her work to the library director for approval and sign-off. The planner who works alone and without the oversight of a superior is rare.

It is prudent to update your superiors regularly about your planning project. Your first report will be a risk assessment and analysis (RAA), which is essentially a list of the risks that prevail at your site or sites, and an estimation of the likelihood of each risk becoming an actual threat. Many RAAs also include a business impact analysis (BIA). A BIA provides speculative information regarding the effects on your library from any negative event. To prepare your superiors for any bad news and unpleasant surprises, you should let them know at the beginning of your planning project about the possible contents of the RAA. They may be already aware of some of the risks that prevail at your library. For example, Californian library boards and directors are usually well aware that earthquakes could strike their sites; most adult Californians have felt ground motion associated with earthquakes at some point in their lives. If you work in a Californian library, it is unlikely that you will shock your superiors by stating that your library is at risk from an earthquake. But they might be surprised and discouraged to hear that four of your library’s larger branches are showing signs of substantial water ingress and mould growth. They might not want to hear that theft of books and periodicals from your central library has increased by 40 per cent over the past three years. And you might hesitate to tell them (but you should) that the central library is situated near older buildings that do not comply with current fire codes, and that if those buildings were to catch fire they could send smoke and fumes in the direction of the central library.
Such information is disturbing, but it is a relief to know that all of these risks can be mitigated: that is, you can manage them in such a way that even if they turn into real threats they will be less likely to harm employees and patrons, and they will not damage your facilities as much as they might have if you had not anticipated them. You cannot eradicate risk, but you can decrease the effects of various threats. Your superiors will be relieved to hear it.

2.2 Committees: pros and cons

Libraries often strike committees to develop disaster plans, or ask established committees such as that responsible for occupational health and safety to do so. The advantages of having a committee in charge of the planning process include:

- contributions from different departments and various levels of management
- different perspectives on risk
- ease in disseminating disaster planning information throughout the library system.

Although it is often left unsaid, there is also the political advantage of sharing responsibility for delivering bad news to superiors. It can be daunting for a single person to tell a board, for example, that a library branch is riddled with mould and bedbugs, and that the cost of removing them will be high. Superiors can make the mistake of ‘killing the messenger’, and to be that messenger could be uncomfortable. There is perceived protection in numbers; hence, many planners prefer to work with or in a committee. Note that the chances of causing displeasure among superiors are greatest during the compilation and delivery of the RAA, which superiors might consider nothing but bad news.

‘I’m glad that we had a committee to handle the disaster plan’, says a technical services librarian at a large corporate library in Toronto. ‘We were able to cover a broad range of risks, and it’s unlikely that a single individual could have identified all of them. And we were able to distribute information throughout the library and our entire organization very quickly. I would not have wanted to work on our plan by myself. Nor would I have wanted to let my boss know all by myself about the risks that our library faces. There was safety in numbers.’

The disadvantages of putting a committee in charge of the process include:

- A longer planning process. Committees can take more time than individuals to make decisions and to draft documents.
- Higher costs. If more library employees are taking time to produce a disaster plan, that plan will cost more to produce.
- Distractions. Committees can lose their concentration and become lost in details and irrelevant matters. Interdepartmental politics can also take up more time than it deserves.

‘There’s also the possibility that a plan will never get past the risk assessment and analysis phase if a committee is responsible for it’, says a university librarian in Texas. ‘Our disaster planning committee has been talking about terrorism for a decade, and still hasn’t got round to discussing the leaky plumbing in our stack areas and the lack of first-aid attendants throughout our system. They can’t get past the risk assessment
phase. They’ve produced memos that say that they’re making progress, but nobody believes it any more. The result is that our library has no disaster plan. That leaves us open to the risks that the disaster planning committee has been talking about for all those years.’

2.3 **RAA, step one: history-taking**

Realize that every site is unique and has a unique risk profile. Sites may share risks but the likelihood of actual threats varies from site to site. Thus, your RAA should be site-specific. If your library system comprises 20 sites, then it is best to cover the risk profiles of each site. There may be the temptation to cover only the larger and more important sites but this approach could lead to serious problems. If an employee is injured at a smaller site during an emergency or disaster, problems of liability could arise. Moreover, employees at smaller sites could feel neglected if you deem only your larger sites as worthy of attention.

The first source of information regarding risks to your library (or any other organization) is its **history**. Sources are as follows:

- Library board records, including reports to a board regarding maintenance and repairs to library sites.
- Centralized administrative records, including a municipality’s property management files, warranties, insurance policies and related records.
- On-site records, including building plans and blueprints, maintenance files and accounting files with details of renovations and repairs.
- Media coverage – newspapers, online reporting, audio recordings of interviews – of any emergencies or disasters at a site.
- Published and unpublished histories of the site: these include histories of the entire library system that contain information about a specific site, as well as miscellaneous materials held in local archives, for example photos and ephemera.
- Employees, current and past: employees’ memories are often the best source of information regarding events that might have caused considerable damage to a site but which media representatives did not consider newsworthy.

‘In fact, I found that employees who had worked at my branch had the best idea of its history’, said a public library branch manager in New York City. ‘The older employees pointed out where the roof had leaked, and told me about a small fire that had broken out years ago in our cafeteria area. This information had gone missing from our files, but without it our risk assessment would have been incomplete. I’d say that the best place to start when you’re compiling a risk assessment is with your fellow library workers.’

2.4 **RAA, step two: inspection**

Having reviewed the history and other documentation pertaining to a specific library site, the next step is to inspect it. Traditionally, the ‘walkabout’ inspection is necessary to identify the greatest risks to any site. Much depends, however, on the perceptiveness
of the person who carries out the inspection. A stroll through a building is inadequate. A thorough inspection requires:

- Mental preparedness and the willingness to make observations about all risk factors on a site. The inspector’s motto: ‘Look up, down and all around’ to spot risks that prevail on a site.
- A tour of the surrounding neighbourhood, to identify proximity risks. This tour might also take into account proximity risks from farther afield. For example, a chemical plant ten miles from a library branch might involve more serious threats than a mall or block of retail stores on the same block as that branch.
- An inspection of the site perimeter, which might include fencing, sidewalks, paved areas, parking areas, commuter areas and bus stops, commercial and retail properties, private residences, bodies of water, roads and highways, and undeveloped land.
- An inspection of the grounds, which might include: pathways and ‘unofficial’ trails; parking areas; gardens, bushes and stands of trees; benches and other seating areas; power sources such as generators, poles and cables; fountains and sculptures; and other organizations or buildings with purposes unrelated to library operations. As well as the physical condition of the grounds, you should note any signs of inadequate upkeep such as excess litter and overflowing litter bins. You should also take into account any signs of potential security problems, such as discarded drug paraphernalia, loitering, vagrancy and abandoned vehicles.
- An inspection of the library building’s exterior, paying attention to obvious signs of wear and tear: cracking, staining or deformation of walls and roofing; inadequate drainage and the pooling of water in the wrong places; loose or otherwise damaged wiring; damaged doors and windows; clogged or otherwise damaged heating, ventilation and air conditioning (HVAC) vents; uneven walkways and stairs; obsolete or damaged signage; inadequate drainage on rooftops; overgrown vegetation, including trees whose branches could fall and damage building components; evidence of pests such as pigeons; damaged or malfunctioning security cameras; vandalism (for example, ‘tagging’); and signs of incomplete or substandard repairs and maintenance.
- A tour of the interior, paying attention to obvious signs of wear and tear: again, cracking, staining and deformation of walls and ceilings; any signs of faulty plumbing or sprinkler malfunction; any signs of damaged wiring or electrical circuitry; substandard lighting systems; damaged (for example, leaky) windows and skylights, or excess pooling of water in doorways and along walkways; loose, shaky or otherwise unstable shelving; damaged or unstable seating and tables; loose or worn-out carpeting; inadequate litter removal; unsanitary washrooms; signs of inappropriate or criminal activity, for example damaged security cameras, discarded drug paraphernalia or damaged assets including books that have been defaced.

2.5 RAA, step three: interviews

Interviews can be formal or informal. You can conduct formal interviews in an office setting with library employees from all levels of the hierarchy. You might rely on a preformulated series of questions for each interviewee, such as:

- How long have you worked at this site? In which departments or areas?
- Do you recall any risks or particular threats (natural, technological, human-caused, and so on) during your time at this site? How did the library deal with those threats?
• Can you point out any current risks that we should address? Do you know of any threat that we should deal with?
• Can you recommend ways to make our library safer and more secure?

You may invite interviewees to provide any other useful information after the formal interview via voicemail or email. Some libraries advise interviewees that all information that they give during or after the interview will be confidential; some libraries guarantee interviewee anonymity. Even so, employees might still be unwilling to divulge information for fear that they could be considered to be troublemakers or whistleblowers.

Be prepared for employees who are nervous about talking about threats to the library. Some employees will consider the risk assessment to be a pursuit of the obvious and thus a waste of time. Others will worry that the points they raise during a formal interview could be trivial or irrelevant. A skilled interviewer will put interviewees at ease, and encourage them to talk openly about anything they believe to be a risk. Remember that what might appear to be an insignificant matter, for example a small stain on a wall, could be a sign of much larger problems such as deteriorating plumbing or a damaged building envelope, advanced mould growth, or faulty drainage. Observing and documenting that small stain could lead to the prevention of a disaster.

Informal interviews may be unstructured and could be held in relaxed settings such as a cafeteria. The interviewer’s goal should be to elicit as much pertinent information as possible regarding perceived risks to the library. The interviewer may guarantee anonymity if library policy allows it.

It is appropriate to ask interviewees to provide more information if it comes to mind later. You should invite them to contact you if they think of something that might be a useful addition to the RAA or any other aspect of the disaster planning process.

‘I really liked the fact that I could keep in touch with the librarian who was working on our disaster plan’, said an academic library administrator in New York City. ‘She made me feel like I was making a helpful contribution to library safety. Interestingly, it was my offhand comment about the wet floor in one of our staff washrooms that led to the discovery of a faulty pipe that was on the verge of bursting. That could have caused a great deal of damage. Now our RAA is more than just another document in a binder. It has become an ongoing procedure that allows us to protect all of our operations.’

2.6 RAA, step four: discussions with external experts

Your local fire department can provide invaluable assistance during the RAA phase of your library’s disaster planning process. In many areas the fire department will inspect public and academic library sites regularly to ensure that they have no outstanding fire risks. Such inspections, however, might be cursory unless you and the firefighters are willing to perform comprehensive inspections. While firefighters are primarily concerned about the risk of fire, they can also advise you about other risks.

‘Our local fire chief was interested in our annual fire drills’, said a public library branch manager in Pennsylvania. ‘But he also talked about drills to deal with toxic
spills. There are highways and railway lines near our branch, and a lot of dangerous chemicals travel within two hundred feet of our front entrance. The chief told us to leave our building as soon as possible after any report of a nearby derailment or overturned truck, and to put as much distance as possible between ourselves and the branch. It’s not just fire that we have to think about.’

Firefighters can advise you about sprinkler systems and other fire controls. Almost any firefighter can show you the safest building evacuation routes for employees to take in the event of any sort of disaster. ‘They can also tell you when to stay inside your building’, offered a public librarian in California. ‘In this region, a firefighter will tell you to get out if you spot a fire, and stay in if an earthquake strikes. People who enter or exit a building during a quake are more likely than anyone else to get hurt. It’s tempting to run outside when the ground starts shaking, but it’s a bad idea. Californian firefighters emphasize that point repeatedly.’

Another source of expert opinion is your local police, who might be willing to inspect your site(s) to determine security risks, and to advise you on the best ways to enhance your security measures. It is worth noting that the police can tell you which measures might not work for you. For example, closed-circuit television cameras (CCTVs) will not necessarily deter malefactors such as vandals, hostile patrons or thieves. In some instances, CCTV systems are warranted and useful, especially when their screens are monitored regularly by security guards. But simply installing a system and asking a guard to glance at a screen occasionally will not provide the highest level of security. The police can tell you if, when and where a CCTV system would be to your library’s advantage.

Other external sources of information on your library’s risks include paramedics, urban planners, architects, engineers, insurance brokers and adjusters, tradespersons such as plumbers and electricians, and other librarians who have worked on their own library’s RAAs and disaster plans. Other local librarians can save you time and effort by sharing the information that they collected for their own RAAs. This does not mean that you should adopt another library’s RAA, or any other part of their disaster plan. That library has its unique risk profile, which might differ from your library’s profile in important ways. But you can benefit from other librarians’ experience, especially if they have identified the risks that prevail in your locality.

2.7 RAA, step five: documentation

Throughout the foregoing steps, you should be taking notes of any risk-related matters that come to your attention. You can scribble observations on paper, or make voice memos on your mobile phone or other portable device. But you must make notes, and when you have completed steps one to four, you should compile those notes in a clear and simple fashion for further consideration. Such notes constitute your risk assessment. You do not need to create enormous amounts of material; in fact a few pages of concise observations might be adequate for your purposes.

Now you may analyse your assessment to discover which risks might turn into actual threats. Risk analyses can take different forms. There is no standard format that
is guaranteed to cover all contingencies; in many cases, the risk analysis is nothing more than well-informed and intelligent guesswork. It is nonetheless useful since it will give you an idea of what threatens your operations, and what measures you should take to protect them.

The basic elements of a risk analysis are as follows:

- **Listing of potential threats:** natural, technological, human-caused, and so on.
- **Scope of disasters:** how they could affect your operations in general, including damage to buildings, displacement of employees and loss of collections.
- **Frequency:** how often any kind of event can occur at a particular site. For example, thefts might occur several times a week; a power outage or brownout might occur once a year; and serious winter storms and high winds might disrupt your operations every four or five years.
- **Timing of onset:** how quickly an event will occur, and whether there is any warning. For example, a riverine flood may take days to occur, and in many cases local weather forecasters and municipal emergency workers can provide ample warning. But other disasters can occur suddenly and without warning, for example earthquakes, IT system failures and fires.
- **Impact:** the effects of any event in the short, medium and long term. A fire that destroys a library building will usually have a long-term effect on the operations of the entire library system, whereas a brief power outage might cause no more than temporary inconvenience.
- **Sustainability:** how serious any event will be in light of the library’s vulnerability. For example, if you back up all of your data regularly on reliable media and in secure off-site locations, and if you have tested your back-ups to ensure that your data is recoverable, then your library should be able to sustain the loss of data. If you have not backed up your data, their loss might be unsustainable to your library.
- **Likelihood:** how likely the occurrence of any event is at your site(s). In the south of England earthquakes are rare, but high winds have occurred frequently in the past, and will probably occur in future. Coastal communities in that region face a higher likelihood of gales. Note that while likelihood is related to frequency and scope it is wise to consider it on its own in reference to specific library sites.

### 2.8 Mitigation: preventative maintenance programmes

Mitigation is the reduction of risks through specific measures. Whatever risk you have identified in your RAA, there are ways to decrease the effects that risk will have if it becomes an actual threat to your library. Generally, the most effective form of mitigation is a well-executed preventative maintenance program (PMP) for each one of your library’s sites. A comprehensive PMP includes:

- **Regular maintenance of all exterior areas:** comprehensive inspections, repairs to buildings and cleaning of vents as required, removal of debris from gutters and drains, repairs to fencing and gates, repairs to exterior lighting, repairs to and updating of signage, care of gardens and pruning of trees, removal of graffiti and ‘tagging’, removal of rubbish and litter, and clearance of walkways and parking areas.
- **A regular janitorial service with the inspection and cleaning of all library interiors:** especially in and around high-traffic areas such as lobbies, washrooms, stairwells and public seating areas.
• Regular (i.e., semi-annual) and comprehensive inspections of all fire and smoke alarms and controls, including sensors, extinguishers, hoses and sprinkler systems.
• Regular (i.e., semi-annual) and comprehensive inspections of security systems, including keycard access systems, CCTV systems, Tattle-Tape systems, security mirrors, controlled gates and turnstiles, panic buttons and intercoms.
• An annual inspection of all heating, ventilation and air conditioning equipment, with repairs and updating as required.
• An annual inspection of all electrical systems, including back-up generators, with repairs and updating as required.
• An annual review of security reports and any other documentation that covers breaches of library security such as hostile and intoxicated patrons, thefts, acts of vandalism and faulty security equipment (for example, malfunctioning alarms).
• An annual review of internal signage for legibility, accuracy and proper location.
• An annual inspection of off-site storage facilities, including those for the storage of back-up data and other media.

All inspections and reviews should be documented, and PMP documentation should be retained permanently. Documentation can be made more efficient and convenient through the use of digital photography. The improving quality of mobile telephones with email, voice-memo and camera functions will lead to the increased use of these telephones for documentation purposes.

Ideally, your library’s PMP will include training for employees as ‘problem spotters’. Librarians and clerical workers cannot be expected to repair leaky plumbing or malfunctioning sprinkler systems, but they should be able to spot these threats and report them promptly to managers who will ensure that they are dealt with before they cause even worse problems. A well-organized system of employee vigilance is the foundation of a first-class PMP.

‘People who work at our library treat the preventative maintenance program as a team-building exercise’, reported a public library director in Texas.

Each of us assumes responsibility for a specific area of the library, and we report any problems to our facilities manager right away. We meet every two months to compare notes and determine whether there are any problems that are occurring in more than one area of the library. Over the past two years, we have spotted an insect infestation, a potentially serious plumbing issue, and a variation in indoor air quality that led to the rebuilding of a couple of air conditioning units. These problems could easily have gotten much worse if we hadn’t been vigilant. And I notice that our employees enjoy participating in the process. I think that it has contributed to better morale.

2.9 Mitigation: gradual replacement of older facilities

As buildings age, they become more vulnerable to various risks. Wear and tear can lead to water ingress and flooding, an increased risk of fire and instability of both structural and non-structural components. In a seismic zone, older buildings can sustain serious damage from even moderate earthquakes. Moreover, surrounding communities and
proximity risks change over time. For example, a Carnegie library building constructed in 1905 might once have been located in a secure, non-industrial neighbourhood. Over the past century, however, a high-crime area has developed around the library. Next door to the library is an abandoned department store that has become a haven for squatters. Local police are concerned about the risk of arson in the area, and are also concerned about the safety of library employees who park their cars in an ill-lit and unpatrolled parking lot in which there have been several muggings and assaults. Adding to the library’s risk profile is the fact that the library is in California, which is a notorious seismic zone. The library’s exterior walls have cracked owing to earthquakes, and municipal engineers are worried that the foundations are weak.

Such a building should be replaced as soon as possible, but in an age of budgetary cutbacks, a new building could be out of the question, at least in the short term. But this state of affairs should not stop the library’s board and management from recognizing the need for a new building and taking the initial steps toward its funding, planning and design, construction and eventual opening.

2.10 Mitigation: insurance

There is no standard insurance policy or satisfactory general template for a library’s insurance coverage. Since there are so many different kinds of libraries with myriad different risk profiles each policy will probably have unique elements. Complicating matters is the cost of coverage. Owing to recent budgetary restraints, many libraries cannot afford comprehensive coverage, and must rely on policies that insure only the most outstanding risks, and that contain substantial exclusions and deductibles.

Many corporate libraries are covered by their sponsoring organizations, which purchase policies that address losses of library assets including contents (e.g., furnishings), collections and especially valuable books, documents and artworks. But public and academic libraries might not have such policies, or may discover that they are covered only for liability and very limited losses of assets.

As far as insurance is concerned, a little knowledge is certainly a dangerous thing. The purchase of household insurance policies is not enough to educate anyone on coverage for a complex institution such as a library. The wisest course of action for most librarians – who probably know little about the technicalities of insurance – is to seek the advice of insurance professionals who specialize in developing and implementing coverage for libraries, museums and galleries. Your local insurance brokers can direct you to these specialists.

2.11 Mitigation: data back-up

It is astonishing how often libraries fail to back up their vital data. Even with clear back-up policies in place, many libraries do not carry out what should be simple and essential back-up procedures. Hence, one result of a disaster is often the loss of
substantial amounts of data. Remember that for all of its advantages, electronic data are the most vulnerable assets libraries own. Without a back-up policy and procedures, and the willingness to follow them, librarians leave their institutions exposed to almost every risk in their risk profile.

The basic elements of an effective back-up system for a library are as follows:

- A librarian or senior clerical worker charged with the responsibility of managing the back-up of the library’s data.
- A vital data inventory, with a record of where the data are stored.
- Reliable storage media.
- A secure off-site storage facility (for example a branch at a distance of no less than 15 miles from the building housing the library’s IT department, or a storage vendor offering secure data storage).
- A secure system of transportation between the library and the storage facility, either via the Internet or by vehicular transport.
- A back-up data storage schedule (ideally data will be backed up securely off-site every business day).
- A testing schedule to ensure that storage media are fully functional, and that all vital data are recoverable quickly and securely.

### 2.12 Mitigation: the key

In the end, risk mitigation and general preparedness depend on the willingness of you and your associates to make sure that your library has a comprehensive RAA and effective mitigation measures. Anecdotal evidence suggests that those libraries with the highest levels of preparedness for negative events have staff with the following attributes:

- good morale at all levels of the staff hierarchy;
- an acceptance of an information-gathering interview process, either formal or informal;
- ongoing interest and participation in committees concerned with RAA development;
- ongoing interest and participation in programmes to investigate risks and to report trouble as required; and
- ongoing interest and participation in orientation and training related to the disaster plan in general.

With these attributes, your library staff will also accept the need for the next part of your disaster plan, which concerns disaster response.

### 2.13 References

#### 2.13.1 Interviews

In this chapter I have quoted a technical services librarian at a corporate library in Toronto. American librarians quoted include a university librarian in Texas, a public library branch manager and an academic library administrator in New York City, a public librarian in California and a public library branch manager in Pennsylvania.
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Conclusion: e-books and the future of technical services

Abstract: E-journals were an adjustment for libraries, taking users to the web interface rather than to the building, but e-books – especially subscription models for books that cannot be loaned to other libraries – take an even more direct hit at what it means to be a library. Libraries and publishers have to struggle together through the conversion to an electronic format again, and surprisingly little help comes from the lessons learned with e-journals. E-books have taken a long time to develop, but now they are emerging as a dominant and important format in libraries’ collections and becoming the tipping point for the electronic format in general. Soon electronic resources and their associated workflows will become the standard approach, and it is the physical formats and their workflows that will become specialized.


After nearly two decades of talking about how e-books are right around the corner, have we finally reached the corner? (Nelson, 2008: 42)
E-books have had a surprisingly long development process, given the relatively easy transfer of other formats to the digital and online world, and have only recently started to get serious traction in the library and reading worlds. The monographic format is simply not well suited to being read on the computer and required a more usable and portable reader – although the current market leaders are really only the beginning of this kind of device’s potential – before the e-book was accepted as a suitable replacement for a paper book.

Online e-books (as opposed to other kinds of e-books, such as CD-ROMs) also unfortunately came to the electronic environment after piracy became common, especially for music. Publishers were understandably afraid of the loss of their profits, but this fear has created the greatest limitation to e-books’ continued growth and success – strong and locked-down digital rights management (DRM). By limiting users’ abilities to print, download and use e-books in the ways they expect to be able to use them, the publishing industry has hobbled its own product.

Now that the e-book is beginning to emerge as a solid format in its own right, not simply as a possible substitute for the paper book, libraries are discovering the immense challenge e-books bring to the technical services workflow and ERM. From the selection process, which is tied intricately to sometimes difficult licensing issues, to the order and receiving process, which is made more complicated by the lack of a physical item to pass from unit to unit, to the discovery process, which involves varied DRM limitations that can frustrate users, e-books present many issues for libraries.

In many ways, e-books are causing libraries to revisit the same issues that had already been addressed with the transition to the electronic environment for e-journals.
Libraries, publishers and vendors need to work together to create a viable infrastructure for the licensing, purchase and use of e-books, hopefully learning more from the past than has been done to date. Once they do, however, the transformation to the electronic format will be largely complete. Rather than e-resources being perceived as an ancillary and specialized format with workflows defined largely in how they differ from physical format workflows, electronic resources will become the standard format within libraries, and the physical formats will become specialized. Further, no longer will electronic resources be appropriately sided with serials; they will cross over to all parts of technical services. E-resources will be both journals and books – the mainstays of the text-based library – and maybe at some point will become so standard that they no longer require the initial “e”.

Defining the e-book

Is the book (the traditional paper book) the content or its delivery mechanism? Until e-books, this was not a question librarians had to consider, so it has made for a complex answer. In some cases authors refer to e-books meaning the content, and in others they refer to e-books as the portable reading devices.

This confusion and the need to find common ground if a topic is to be discussed via the literature have compelled many authors to define the e-book as a starting point in their line of argument. Regarding the delivery mechanism, the key element that makes the e-book different from the paper book is how it is obtained. Nelson (ibid.) put it concisely: “e-books are consumed on a screen rather than on paper”. They are book-like content read on a screen, any screen –
until they are printed out, one assumes – which makes the portable reading devices developed with the goal of reading e-books more safely called e-readers.

The more interesting question in many ways is: what is the content? Armstrong et al. (2002: 2), after outlining the complexity inherent in attempting this kind of definition, define the e-book, in effect, largely as not an e-journal:

Within the context of the research reported on here, we use the term e-book to mean any piece of electronic text regardless of size or composition (a digital object), but excluding journal publications, made available electronically (or optically) for any device (handheld or desk-bound) that includes a screen.

Some keep the tie to the paper book solid, calling electronic books “the online equivalent of the printed item” (Safley, 2006: 445), but many people want much more than that. Even in 2001, Snowhill was calling for e-books to move forward to be multimedia creations:

Print text can be integrated with multi-dimensional objects, sound, and film to create a whole new kind of monographic work... The current mindset is to replicate the print version of a book, but future development needs to recognize the potential scholarly significance of increased integration of unconventional media with text in e-books.

Coyle (2008: 161), writing more recently, is similarly frustrated. “The problem with electronic books is not that they are electronic, but that all of our attempts have been to render the print book electronically rather than developing a new technology that facilitates reading.” In the end, Soules (2009: 7) puts it well: “Defining an e-book depends on one’s perspective and how broadly one views its possibilities.”
E-readers

A significant milestone of e-book development has been the evolution of the e-reader. A number of these, notably the SoftBook and Rocket eBook, emerged in 1998. These early e-readers were understandably exciting to the library world, but they were not an intuitive fit, and most of the early studies of e-readers in libraries focused on how they might be used.

In 1999, for example, a group of library systems in the Rochester, New York, region was awarded a Library Services and Technology Act grant to investigate e-readers, with each participating library receiving two SoftBooks and three Rocket eBooks. The libraries ran into involved and varied challenges as basic as how to purchase books – you needed a credit card, which not all institutions had – and downloading materials. At one library the only analog phone line (necessary to download SoftBook e-books) was in a janitor’s closet. The libraries also faced the challenge of having a limited selection of titles for the e-readers, mostly just popular fiction and non-fiction (a problem continuing today). The overall conclusion? “Electronic book readers are not library-friendly, and therefore require much accommodation in order to integrate the format” (Gibbons, 2001: 75).

Libraries across the world were interested in acquiring these early e-readers, and in some countries libraries had even more challenges than those in the United States. At Toowoomba Library in Australia, for example, the attempt to lend e-readers was described as follows: “In short, the Toowoomba experience has been one of total frustration – from the inaccurate sales pitch of what the readers can actually do, to the lack of recognition by the big ebook companies that customers may live outside of the US” (Hutley et al., 2002: 37).
These early e-readers faded away, unable to sustain themselves after the dot-com and technology bubble burst in 2001. They had never gained a large market hold and were gone long enough that when the next generation of e-readers – the Kindle, Nook and others – emerged in the last quarter of the decade, they seemed all new again. What Gregory (2008: 266) called “a curious resurgence in the dedicated e-book devices” was the first taste of what could be possible for e-books. The Kindle in particular, because it was linked to the immensely successful Amazon and had a new technology, E ink, that virtually eliminated user concerns with eyestrain and reading in bright light, was a tipping point for renewed interest in e-readers.

Once again libraries were excited about the potential of e-readers, but once again they were uncertain how they could be used by libraries. The dean of libraries at Texas A&M University approved the purchase of 40 Kindles (along with a $100 Amazon gift card for each) for library workers and teaching faculty to learn more about how these e-readers might be used in the academic world and allowed participants to use the Kindles for at least a year (Clark et al., 2008). Penn State University Libraries teamed up with Sony Electronics in 2008, negotiating a donation of 100 PRS-505 E-Book Readers from Sony as a pilot exploration of the application of these e-readers to curriculum courses, loaned to library patrons and used in support of disability services (Behler, 2009). Aalto University Library used five e-readers in its study – the Foxit eSlick, Bookeen CyBook Opus, BeBook, Kindle and Sony Reader Touch Edition PRE-600 – giving each to one of five masters’ students to be used for seven weeks. This study went past looking at content provided by vendors specifically for these e-readers and paid attention to how the e-readers handled the larger realm of
library electronic content such as e-journal articles (Aaltonen et al., 2011).

A question as the market develops is how much users will want dedicated e-readers. The iPad, for example, has apps for e-readers such as the Kindle, and can obviously do much more than the e-readers. Will users want such limited devices? The E ink reading experience is much better than reading on a backlit screen for now, but no one knows what will be developed in the future. What is exciting is that this field is in a rapid pace of development, with many new vendors entering the market. A good source for the current state is Griffey’s (2010) analysis of the e-reader market, which highlights the new and emerging developments in the field for both hardware and software.

A major challenge so far for libraries has been that lending the e-reader itself is fairly unsustainable for a large patron population. If many people start buying the devices, though, which is likely given the rapidly decreasing prices of products such as the Kindle, the library can more easily get into the game of distributing content (and deeper into the challenge of proprietary formats that often comes with e-readers).

E-book aggregators

E-readers are only one piece of the puzzle, of course. For libraries, the majority of e-books are bought with the expectation that they will be read on a computer screen, and many of these are purchased through the large aggregators. The first large-scale e-book services were NetLibrary, ebrary and Questia, which began to emerge in the late 1990s. Each of these vendors had a different initial target market and business strategy: NetLibrary focused on libraries,
promoting a one-user-per-book subscription model; ebrary developed a pay-per-use model in which users could browse for free but pay for printing, saving or emailing content; and Questia focused on individual users, especially students, and had a subscription approach based on the time spent on the platform (Campbell, 2001: 133; Edwards, 2002: 241–2).

NetLibrary, as it was the friendliest to library needs, was the vendor to gain the most initial traction in the library market. Its one-user-per-book model was highly controversial, though. Some called this approach “an intriguing model tuned to library realities” (Crawford, 2000: 57), but others thought it was a surprising limitation on what could be achieved with e-books: “NetLibrary’s 1998 one-book-one-user model shocked librarians the world over. The great advantage of online access, after 24 hours a day, 7 days a week, 365 days a year access and zero shelving space requirements and stack maintenance, is the end of scarcity” (Buczynski, 2010: 14). Also at issue was the subscription model itself. Libraries had been used to buying books, not leasing them, and this presented a significant shift in the concept of how libraries provided books to their users.

Since its start, NetLibrary has gone bankrupt, been purchased by OCLC and subsequently purchased by EBSCO. Ebrary continues to be a strong market contender, and other large aggregators have also emerged, such as EBL and MyiLibrary. There continues to be a variety of business models (from leasing to ownership to a combination of the two) – the most popular to emerge in recent years being patron-driven acquisitions, where the titles selected for purchase are only those actually used by patrons.

A promising development has been partnership between the e-book aggregators and the academic book vendors to provide e-book approval plans. Approval plans have been
highly successful for print books, providing a customized collection based on an individual library’s needs, and the potential for success in e-books is also clear, either as a selection process or in a patron-driven model. This also takes a critical step toward the merging of the print and electronic acquisitions workflows.

**Publisher-direct e-books**

Although the first stage of e-book purchase by libraries was primarily done through the large aggregators, in recent years there has been a swell of publishers wanting to deal directly with libraries, such as Springer, Oxford University Press and Taylor & Francis. This often requires more time invested in license negotiations, but it also often results in lighter DRM for the library’s users and can bring platforms with more advanced features.

Many of the offerings from publishers are in the form of e-book packages, based on subjects and often divided between backlist and current content. Some of these are comprehensive, including the publisher’s full front list, allowing libraries to give real consideration to exchanging print books for e-books on the approval plan. They also present interesting challenges to the technical services operation, as MARC record loads are not as cleanly tied to the acquisitions process.

This process is similar to what occurred with e-journals. Initially, the majority of e-journal acquisitions were done with subscription agents, but then publishers stepped in to deal with libraries directly, focusing on the “Big Deal” approach. As with e-journals, e-book publishers are simply not as equipped to handle the acquisitions process as the large vendors. What libraries gain in package deals with
publishers they often lose in workflow complexity, such as the management of what would be standing orders, and purchasing flexibility, such as the ability to purchase e-books title by title or via a profile.

User preference

One of the big questions for libraries interested in purchasing e-books has been: do users really want them? If so, what kinds do they want? Many libraries have surveyed their users about what they think about e-books (including if they know that e-books exist), and a common component of those surveys is whether or not the users would prefer the print or electronic version of a book.

Some of these surveys have shown more preference for e-books than some librarians might expect, given the often-mentioned feedback from users at reference desks that they are frustrated by the need to read e-books on the computer screen and cannot print or download enough of the content. In 2005, for example, the University of Denver sent a survey to all students, faculty and staff: “In response to the question ‘If you had access to print and electronic versions of the same book, which would you use?’... the vast majority (80.4 percent) indicated some sort of flexibility between the two formats” (Levine-Clark, 2006: 292, 294). Similarly, a survey of undergraduates at the College of Mount St. Joseph in the fall of 2004 reported that “If students were to be given the choice between using either a print book or the book’s electronic equivalent, 66 percent would choose the print book while only 34 percent would prefer the e-book” (Gregory, 2008: 269). Thirty-four percent might be a minority, but it is a significant proportion, especially given the limitations of the online e-books to which this study was referring.
Another approach to understanding user preference has been to analyze usage trends, as done at the University of Texas at Dallas Library. This library purchased access to e-books in ebrary, Safari, Oxford Reference Online, EBL and others, and, upon evaluating the usage, concluded:

This study found that the demand for electronic books as expressed by usage statistics is enormous and growing at an exponential rate. From the overall experiences of an academic library which invests heavily in the format, electronic books are offering library customers a level of interaction with monographs which has never been available. Many users already prefer the online version of a text to a printed resource. Advances in technology can make reading online comfortable. (Safley, 2006: 456)

The underlying question to many of the user preference studies is whether e-books will replace print books, but that question does not do justice to the potential of what the e-book format could become if it was liberated from its tie to the print format.

**E-books as a different reading experience**

Some of the most interesting research on e-books is in how this format is actually used by students. Berg et al. (2010: 521–2), for example, evaluated undergraduate science students using eight e-books and print books for information retrieval. Every student used the same titles in the study, but the titles were evenly split between the formats for each student, and no two students had the same
combination of titles and formats. They discovered that students used very different approaches when attempting to find information in e-books compared to print books:

Participants used linear approaches when seeking information in print books. When they were assigned a task and given the corresponding book in print format, they began to pursue a discrete information retrieval strategy. The linear approach consisted of the following steps: identifying keywords; looking for those words in the table of contents or index; turning to the designated page of the book; and scanning for relevant content. Participants consistently followed this strategy through to completion of the task... In contrast, participants working with e-books did not follow a linear path. They did not progress seamlessly from keyword identification to discrete information retrieval strategy, but rather appeared unsure as to how to approach the task. Participants pursued and abandoned multiple methods. They did not choose a strategy and follow it to completion, but rather abandoned search strategies when faced with obstacles... After multiple attempts with multiple strategies in the electronic environment, participants often expressed that they hoped to serendipitously come across the information.

Even if the e-book is a digitized book, meaning it has all the component parts that make a book easy to navigate such as a table of contents and index, the simple loss of the physical book can remove the awareness of those tools from the student’s mind. This effect is compounded by the overall different reading approach of print compared to electronic text. As Cull (2011) said, “all readers, including expert readers – such as university students and scholars – tend to
read online digital text differently than the printed word”, and “Within academe, everyone – from first-year undergraduates, to practitioners, to professors – [is] exhibiting a similar tendency to search ‘horizontally’ instead of ‘vertically,’ skimming information and bouncing quickly from place to place.”

Although much was made of early e-book content being from disciplines more appropriate for fact seeking and information retrieval, such as reference books and titles in computer science and business, now that e-books in all subjects are becoming widely available and purchased or licensed, it will be interesting to see how researchers’ patterns adjust.

E-books in the academic environment

E-books in the academic environment are about more than a pleasant reading experience; their usage is intricately tied to how well the user can take notes, mark portions of text and navigate in a way that is efficient for doing research, which often does not include progressing through the text from beginning to end. Online e-book platforms have accommodated some of these needs and often have the added advantage of a full-text search, but if users want to read the books on portable devices, as it seems they often do, e-readers need this ability as well. As said by Aaltonen et al. (2011: 25):

E-readers are currently great for reading novels, but lack the functionality required for academic reading, annotating and notetaking... the inability for easy
browsing, navigating, searching and zooming make the devices slow to use in non-linear reading. In addition, the readers are not well suited for material with colour graphics, tables, pictures and equations. In academic use students and researchers do use multiple resources and need the ability to jump from one document to another, making use of links and crossreferences. This is not yet possible on most e-reader devices.

A further complication is that e-books used in research are part of the scholarly continuum and therefore need to be stable, citable content. All electronic content can be easily updated, becoming “version-less”, a problem for academic research. As Soules (2009: 10) said, “There is now the real possibility of continuous revision of large or small portions of e-books as the authors or the author/readers incorporate new ideas; add or excise text, images, or other elements; re-structure content in new ways; etc.”

Related to the concept of stable content is the issue of e-book preservation. Many of the e-book acquisition models are based on leasing content rather than purchasing it, which has the potential of putting future use of these books at risk. Libraries must consider the importance of perpetual access rights to the content they purchase and how they would provide access to these materials, such as through preservation efforts like Portico and CLOCKSS or other means, such as a local archive.

**Digital rights management**

The most contentious area of the discussion between libraries and publishers, with vendors often caught in the middle, is that of the rights associated with e-books.
Libraries want what they have with books – the ability to lend e-books to other libraries – as well as the full benefits of the online environment – access to unlimited simultaneous users. Patrons want the ability to print and download easily, just as is often possible in the e-journal world. Libraries also want their users to be able to read the content on the platform or portable device of their choice – not just one particular device. Publishers, though, have taken the opportunity to handle this new e-format very differently than the established models available with e-journals. As Craig (2003: 1088) writes, “The advent of the e-book... has rewritten the rules on how new forms of the written word and the notion of the lending library are to coexist.” The great fear is lost profits – whether through piracy by users or through the sharing of e-books among libraries. The use of e-book content is strictly controlled and often limited, and e-books are often in proprietary formats. Griffey (2010: 8) makes an excellent comparison of e-books to digital music.

This situation and system has already been tried in the realm of digital music. DRM was a failure in actually preventing piracy, and the result, after almost a decade of a system where music was locked to specific players in the event that it was purchased for that player, was that all major music sellers online now sell DRM-free music.

Hopefully such a realization will come to e-book publishers and vendors as well. As it is now, the uncertainty about security and rights has created a tumultuous environment when publishers have even pulled books from library lending that were previously available.
The e-book acquisitions workflow and its placement within technical services

For e-books, the tangible, linear acquisitions workflow of print books does not apply. No longer does a physical item pass from unit to unit, bibliographic records are treated more often in batch than title by title, and the ILS is not the dominant access point. With an e-book purchase, it is about the data – license, administrative and usage – all data that the ILS cannot accommodate but that the ERMS or next-generation library management can, or should be able to, handle.

E-books are also not a good fit with the existing electronic resources acquisitions workflows. Electronic resources units were largely formed in the context of e-journals and were therefore often most closely aligned with the serials units of technical services. Although in some ways e-book purchases are becoming “serialized”, with the change to packages and front-list subscriptions and the inclusion of continuing access fees, they are still somewhat aligned with a firm-order workflow more common to print book acquisitions.

In many libraries this has resulted in confusion on where to put e-book work. Are they ordered by the print acquisitions unit or by the electronic resources unit? Often it becomes a blending of the two, with print acquisitions ordering individual titles and electronic resources handling the packages and subscriptions. In this way the rise in e-book purchasing has challenged the organizational structure of many libraries yet again. It has also highlighted the need for all acquisitions staff to understand better the issues related to e-books, such as knowledge bases and platforms, so technical services as a whole can be effective.
As with the evolution of any new format, though, it is certainly not just about the libraries. Mays (2010: 56) made the good point that “not only do Acquisitions and Cataloging share the work; Library Systems, eBook suppliers, and ILS vendors also factor into eBook workflows...”. E-books are new and different enough that the pricing models and methods of buying are in their infancy, with the bookselling experts – the large resellers – still largely standing on the sidelines. As the next-generation library management systems emerge, with their focus on the electronic resource workflow and life cycle, the place of e-books in the workflow will have to be more effectively resolved.

The effect on the library as a whole

The work with e-books is certainly not confined to technical services. As e-books challenge what has traditionally been the most recognizable component of a library – its print collection of books – they affect all parts of the library. These issues were clear to some even early on. Dillon (2001: 124) wrote, “We have learned that e-books require adjustments to a library’s collection development, acquisitions, cataloging, and public services departments in order to integrate them into the routine operations of the library.”

Whereas print book management was largely about collection size and cataloging within the ILS, e-book management is about access, usability and discoverability. In the context of DRM restrictions that often do not allow libraries to lend e-books and the rise of subscription and pay-per-use models, the technical services work associated with e-books has become less about purchasing and
preservation and more about interaction with the user. Soules (2009: 18) makes the case that e-books have brought technical and public services closer: “Particularly in larger libraries, technical services staff can be quite distant from their users, but now, more than ever, that needs to change.”

As many of the acquisition models for e-books are different from traditional print models and there is a trend toward leasing content, one of the areas most affected by the emergence of e-books is collection development. As titles become available on multiple platforms, collection development librarians need to understand fully the differences among platforms and make decisions about which are best for their subject areas, budgets and local populations. There is also a concern that if a library has too many different platforms, users will not be able to gain familiarity and expertise with any one of them, and libraries need to work through the pros and cons of selecting a library-wide preferred platform.

Conclusion

Although libraries will continue to purchase some physical-format materials for the foreseeable future, the successful shift of books to the electronic environment represents a turning point in defining what it means to be a library. No longer will electronic resource management be a special version of the library acquisition and access workflow – it will be the primary version. All the areas discussed in this book will be dramatically affected by the rise of the e-book, and the move to e-books is important enough that it also speaks to the future of libraries in general. A few predictions of changes in the areas covered by this book are offered below.
Technical services models

Due to the nature of managing e-books, the lines between technical and access services will blur dramatically, as will the lines between systems and electronic resources. If patron-driven acquisitions and pay-per-use e-book models continue to grow, collection development will shift more into the hands of the users and out of the hands of the library. What began as (and often has remained to this day) a very small unit within the library – electronic resources – will grow to become the new version of resource management within libraries in general. The skills of connecting resources to users, using technologies beyond the ILS and acquiring and managing resources within the non-linear, often iterative workflow of electronic resources will become necessary skills for all resource management librarians.

Workflow and staffing

E-books will command a shift of the technical services staff structure just as e-journals did, but they will also require a change in the access services staff structure. Regarding technical services, more staffing must go to licensing, purchasing, managing and providing access to e-books. In access services more staffing must go to troubleshooting electronic access issues, serving user needs far past the business-hours approach taken by many electronic resources units and more like the extended hours of many current access services departments. As libraries are not likely to get new positions, this will most likely mean moving staff in the library away from work with physical-format materials. It is not a stretch to imagine that access services, traditionally largely a physical-format management department, will need
to shift more into the electronic environment, possibly becoming the caretakers of the library’s virtual entrance – the website.

Because e-books are often part of a firm-order workflow but also have many qualities related to electronic resource acquisition, such as licensing and activation, they have not fit easily into the existing technical services structure. To accommodate them, workflows will have to be adjusted. For example, instead of creating the purchase order in the system at the time of order, as is typical for a print acquisitions unit, that portion might have to come later, as it typically does for an electronic resources unit. Eventually physical-format acquisitions, if they remain separate due to irreconcilable workflow issues, will be able to be staffed by a small number of people and treated as a specialty workflow.

The ERMS and beyond

As the ERMS transitions into the next-generation library management system, the records issues will have to be resolved. The knowledge base has been shown to be effective in the electronic resource world, and the dream would be to have the same for all formats. How well the developers can achieve this certainly remains to be seen, but if there can be a system that holistically represents the library’s collections and associated licensing and usage data, it will greatly facilitate resource sharing and allow new kinds of collection development and acquisition to evolve. E-books, because they are sold as front-list, package, patron-driven and title-by-title options, are a particularly thorny problem for these emerging systems.
**Discovery**

WorldCat Local has shown that discovery of monographs can be effective through a knowledge-base approach. This holds promise for what could be a new future for resource management. Another potential development is the highlighting of book chapters. Just as discovery happens at the article level for journals, it is likely that, given the appropriate data, discovery could evolve to happen effectively at the chapter level for books. This would dramatically change the dynamic of discovery and the process of research, allowing users to be much more focused in their search for materials.

**Consortia**

E-books, because they are still an emerging format, provide an excellent opportunity for new kinds of partnerships among libraries. The shift to electronic format in journals allowed much greater access at libraries, and the hope is to have the same for books. Consortia, because they can provide guaranteed high sales and stability for vendors, might be the mechanism needed to convince publishers to relax the DRM restrictions that are holding e-books back from ready user adoption and allow this format to become fully realized.

**References**


A culture of technology

Abstract: While scientists debate the evidence that technology-using behaviors are changing the way the brain functions, there is much evidence that the Millennial Generation has incorporated technology into their lives in a way that greatly exceeds the influence technology has had on past generations, and, in so doing, has created a culture of technology. Librarians face new challenges as they adapt to this generation while continuing to serve the interests of less technology-connected users.

Key words: culture, technology, Millennials, technology culture, technological innovation, plugged-in patrons, digital natives, collective intelligence, information literacy, social networking.

Culture describes the manner in which humans work and interact, and defines the rules for social interaction. During World War II the role of women changed when they started working in factories as replacements for soldiers. Afterwards, they returned to the tradition of raising children. Their daughters went to school in dresses and sat quietly while the teacher’s attention was given to their brothers; after all, the girls were expected to grow up and keep house, while the boys joined the workforce.

In actual fact, the girls did not stay home, they went to work and fought for equal rights, nurturing their daughters in a different culture, and since the 1980s there have been
more girls in US colleges than boys. Imagine the world today
if the culture of the last thousand years had treated both
sexes as equals? How many female Isaac Newtons have been
lost? That is the power of culture.

Today a new generation, often called the Millennial
Generation, is embracing technology with such force that a
new culture of technology has emerged. This culture is
defining how people communicate, collaborate and
incorporate technology into daily activities. It is demanding
more flexibility in the workplace and using technology to
bridge family, social and work activities. It equates change
with something “better” and is impatient with others who
are slow to adopt new technology, or technology that isn’t
intuitive or reliable. For this generation, technology isn’t a
tool – it is more like a family member.

**Millenials are different**

Technology has moved beyond work and entertainment into
the area of social interaction. Economics, technology and
social factors all play a role in creating the variations that
distinguish one generation from another. Although there is
overlap between the birth dates associated with each
generation, it is the similarities among individuals born in a
specific age range that make them different from those who
come before and after.

The six named generations are: the Greatest Generation,
the Silent Generation, the Baby Boomers, Generation X,
Generation Y and Generation Z. The Greatest Generation is
composed of people who matured during the Depression
and fought in World War II. Members of the Silent
Generation, too young to fight in World War II, were
influenced by childhood experiences of the Depression. The Baby Boomer generation grew up during the time of affluence after the war, and as teenagers engaged in an anti-establishment counter-culture. They were followed by Generation X, which was raised in two-income families, creating an independent and resourceful generation suspicious of authority. Generation Y, also known as the Millennial Generation, is now coming into adulthood and these young people are the first generation to grow to maturity having never experienced a world without computers. The ubiquitous presence of electronic gadgets has profoundly influenced this generation to the extent they have been called digital natives because of their ability to understand and manipulate technology in an organic way that is unfamiliar to older generations. The Millennials are followed by Generation Z, also called the Internet Generation because of their early exposure to the Internet and the convenience delivered through networks.

Beginning with the Millennial Generation the number of years between generations appears to be growing smaller (see Table 2.1). Some factor is, or some factors are, influencing people so dramatically as to create differences that are reducing the time between generations.

<table>
<thead>
<tr>
<th>Generation</th>
<th>Birth date range</th>
<th>Number of years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatest Generation</td>
<td>1901 – 1924</td>
<td>23</td>
</tr>
<tr>
<td>Silent Generation</td>
<td>1925 – 1945</td>
<td>20</td>
</tr>
<tr>
<td>Baby Boomers</td>
<td>1946 – 1964</td>
<td>18</td>
</tr>
<tr>
<td>Generation X</td>
<td>1961 – 1980</td>
<td>19</td>
</tr>
<tr>
<td>Millennials</td>
<td>1981 – 1989</td>
<td>8</td>
</tr>
<tr>
<td>Generation Z</td>
<td>1990 – 1999</td>
<td>9</td>
</tr>
</tbody>
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This trend seems to match the increasing speed of technology penetration within society, so it is not surprising that the Millennial Generation is taking the lead in a cultural revolution that includes technology. This generation uses technology whenever and wherever they want and they are as likely to send a text message at 2.00 a.m. as 2.00 p.m. They blend work, home and social lives into a seamless continuum, and technology is the glue that holds it together. They reject traditional classrooms and don’t like being cooped up in an office. They also want to be judged on their performance, not on predictable office hours (Tapscott, 2009). They are comfortable figuring out new technology and love customizing their gadgets with wallpapers, ring tones and apps to notify them of updates from social media sites. Social networking enables this generation to collaborate in a manner that keeps them connected 24 hours a day. They collaborate through chat rooms, blogs, instant messaging and multi-user games, and they share everything from personal insights to challenges at work.

As confident as Millennials are in their technology culture, there are hidden dangers in their openness. Notifications come at all times of the day and night, and can be seen by others as interruptions. Living in a technology culture that is always on can result in a loss of freedom because of expectations that a person will always respond immediately. Further, there is nowhere to hide when technology is constantly updating a person’s GPS location, turning privacy into an illusion. Privacy is a concern that deters many older generations from embracing the technology culture. They are worried about the amount of personal information available to the public and about how it is being used. E-book vendors are collecting a large amount of information on their users; everything from the average length of time it takes to read a book to how people browse is being collected.
without the knowledge of readers (Alter, 2012: 1). Although much of this information is gathered in order to analyze use for future publications, librarians see this data as an intrusion into personal space.

Older generations which have adopted aspects of this culture have not integrated information technology into their “DNA” as the Millennials seem to have done. Neurobiologists are just beginning to explore the effects early exposure to technology is having on brain development (Prensky, 2001). An experiment was undertaken by Gary Small using magnetic resonance imaging (MRI) to determine whether prior experience with technology influenced brain function. Those with prior experience of searching the web activated different parts of the brain than those with no experience. This experiment involved a small sample of 24 subjects aged 55–78, and “despite such limitations, our findings point to an association between routine Internet searching and neural circuitry activation in middle-aged and older adults” (Small et al., 2009: 125).

It will be interesting to see if this experiment can be replicated, but the possibility that exposure to instant answers and web search results is altering brain functions is startling. If our thought patterns are being modified by experience with technology as is suggested, then it is important to understand those changes. Otherwise, the more we rely on search engines as our guide, the more our intelligence will be shaped by technology. The filtering of information by search engines must be questioned through a process of critical thinking.

This is the new frontier for literacy, and it is an opportunity for librarians to renew the spirit of the White House conferences. Twentieth-century librarians must help readers interpret information and discover the significance of the research. This is something search engines can’t do, and is often masked behind large result sets.
Millennials as plugged-in patrons

Millennials are plugged-in patrons, born into the technology culture; they bring different perspectives about the library that librarians can use to improve services. Millennials like participation and they expect their voices to make a difference. They make ideal participants in focus groups where they can mingle with peers, bounce ideas around and provide opinions on library operations. However, they are not likely to wait patiently for improvements so librarians need to be prepared to move quickly when a particular direction is apparent.

Not only are Millennials willing to provide input, but they will do so without being asked. As a consequence, librarians should be listening on social networking sites for their brand name in order to monitor what people are saying about their library. Best practices developed for commerce can be adapted to the public sector to provide a model for a new emphasis on the user experience in library services.

Librarians should not underestimate the important part Millennials can play in fund-raising. Research indicates that this is a generation which places a high value on civic-mindedness and which demonstrates a commitment to volunteerism (Myers and Sadaghiani, 2010; McGlone et al., 2011). Any library campaign which requires volunteers for manpower should look for ways to reach this generation. These could include contacting local schools and colleges, and distributing flyers around Millennial hang-outs. When Millennials believe that their efforts are serving a greater good they will return, so it is important to emphasize the contribution they make rather than the assigned task. If Millennials believe they are being used as free labor without a social value, librarians will lose their support. Millennials are also likely candidates for volunteer work in order to
learn new skills; in this case a connection must be made between the work they are volunteering for and the skills they are learning that will help them further personal goals.

When planning library programs librarians should expect a large number of drop-ins because Millennials are less likely to register in advance, and they should expect to share their attention with mobile devices. Getting the attention of Millennials will require new methods. Librarians should consider going to where Millennials hang out, including coffee shops, malls and other social attractions. Game nights in the library might attract Millennials, and a video-editing booth will capture their interest and keep them coming back to the library.

It can be difficult explaining the principle of copyright to a Millennial who believes information should be free. There is a growing divide between their generation and older generations that have benefitted from the protection of copyright. New laws are needed to define copyright in an age where digitization makes it possible to remix an original into something new. When does a video remix become a new video and how does copyright relate to both? Current interpretation of the law would prohibit any alteration of a protected item without permission, but the web has many examples of creative music and video editing that seem to violate the law. When it comes to digitized textual material there are provisions for fair use, but the Millennial Generation appears to have difficulty understanding these requirements and instructors often complain about plagiarism.

As researchers, Millennials are self-reliant and expect a single search to give them the results they need (Sweeney, 2005). In the British Library and JISC report, “Information behaviour of the researcher of the future” (University College London, 2008: 35), it appears that Millennials search in a serendipitous manner, jumping from link to link.
If they start on a library page they may leave it and never return. Millennials are an impatient generation; deadlines, ease of use and quick access to full-text sources are of prime importance in their research (Young and Von Seggern, 2001; Connaway et al., 2011).

Millennials are adept at filtering information but they are not skilled at evaluating the quality of the information (Taylor, 2012). Their skills for analyzing and examining logic appear to be underdeveloped, and they are more likely to accept information without questioning the source. They evaluate the quality of information only when they see a value in spending extra time doing so. For example, they understand the need to evaluate sources for a classroom paper but see little use in spending time assessing resources for a personal search (Gross and Latham, 2009). A second trend among Millennial researchers lies in the importance of reputation, or prior experience with a resource in evaluating the credibility of sources. For example, the reputation of the search engine that brings up a link may be enough to make that link credible (Hargittai et al., 2010). Millennial researchers often express a bias for a favorite site, and for selecting the first listed citation among search results (Porter, 2011).

Millennials are insatiable consumers of information from social networks or collective intelligence. Collective intelligence is a phrase used to describe the process of a group of people collaborating on an opinion or project. It is a helpful process for generating ideas and can be used to divide work; however, more attention should be given to the relative value and safety of this activity (Poore, 2011).

Research on the Millennial Generation described the challenges of teaching this generation (Worley, 2011). They learn better through a participatory process including, for example, games (Werth and Werth, 2011). Millennials find personal relationships a powerful resource, so librarians
who take the time to develop these contacts will be more successful in teaching the research skills needed for critical thinking: “Students prefer to seek help from people they already have an established relationship with, but they may also solicit help from strangers who appear available to talk and approachable” (Gross and Latham, 2007: 343).

Information literacy is a valuable skill, and when Millennials learn that librarians are willing to share knowledge that will help them succeed they will be welcomed into social networks. Knowledge builds credibility, and credibility is the foundation of social networks. Librarians must devote the time necessary to build the credibility that will attract Millennial followers.

Commercial companies are finding ways to do business almost entirely through social networks. For example, Threadless, a company that was founded in 2000 by Jake Nickell and Jacob DeHart, is based on a community of users who submit designs for T-shirts (Brabham, 2010). Like Wikipedia, which has user-supported content, Threadless has a community that both contributes and votes on designs. This new trend in collective intelligence can be applied to the library through patron acquisitions, ratings, reviews and other crowdsourcing activities.

Communication is vital to building relationships with a generation ensconced in participation. Technology will provide one means for collecting information about what Millennials want and need, but an informal high-touch approach will also work. This can include blogs, focus groups or simply “walking around” or being available for consultation in a place where Millennials gather. Librarians should be careful with blanket e-mails or forced communication, which aren’t appreciated. Millennials, like most generations, want control over the information they are receiving.
According to the Pew Research Center the recession has impacted this group more than older generations: young adults aged 18–24 have an employment rate of 54 percent, which is the lowest since 1948 (Taylor et al., 2012). Many have taken multiple jobs and are working in non-traditional workplaces. Libraries can be a welcoming setting for these nomadic workers by providing comfortable spaces for working and wireless connectivity. Library programs directed at assisting Millennials to find jobs or acquire work skills will also bring good publicity to the library, either through word of mouth or conventional media.

Millennials as librarians

When a Millennial is hired as a librarian, s/he comes to the library with her/his social network. This can help a new librarian with problem solving and idea generation. Companies are beginning to recognize the importance of social networking as an aspect of performance. Not only do social networks assist workers in problem solving by tapping into collective intelligence and information-sharing, but they are also a factor in helping workers adjust to change. Social networking analysis is a tool that can be used to develop a map of relationships between workers to identify individuals who are isolated from organizational processes, or identify where bottlenecks may be occurring (Knoke and Yang, 2008; Landis, 2010). By analyzing these relationships, libraries can enhance their organization to better energize staff to face the challenges of technological change.

Millennials also expect their employers to be contributing to the improvement of their communities. In a 2006 survey by Cone, “A majority of respondents (78%) believe that companies have a responsibility to support social and/or
environmental causes” (Cone, Inc., with AMP Agency, 2006). Millennials’ technology skills will be helpful in developing programs to teach others about the web or library resources, and their social orientation makes them likely candidates to visit nursing homes or other centers to promote the library.

Millennials are a natural choice to evaluate technology and make recommendations for when and how to add new devices to the library. They can shepherd technology through the stages of implementation from introduction to adoption (Blackburn, 2011). When funding is an issue they should be encouraged to explore grants and other funding possibilities. The MacArthur Foundation’s Digital Media and Learning Program (http://www.macfound.org/programs/learning/) is an example of one program that offers funding for technology projects in libraries.

Millennials are direct, and they speak out when they believe something isn’t fair to either themselves or their co-workers. It is important that supervisors of Millennials talk openly about areas of disagreement. Millennials expect their working environment to evolve at a fast pace so good communication is vital. They will challenge the library to move in new directions, and this can be a source of friction with older colleagues. As a result, transparent decision making is especially important to maintaining good relations between management, older generations and Millennials.

It comes as no surprise that a generation accustomed to free access to information on the Internet and a lifestyle of collaboration would be a strong supporter of the open source movement. Open source is a hallmark of the technology culture and is in direct opposition to corporations guarding copyright and trade secrets. Although this can be a problem for companies, it can be an asset for libraries building open source applications as long as copyright boundaries are respected. This requires managers to discuss issues of copyright with new employees.
Managing the generation gap

Millennials may be different from other library users only in the degree to which they have been influenced by technology. Older generations are not excluded from the technology culture as the Accenture (2012) consumer electronics products and services usage report indicates. Older generations may be later adopters of new technology, but they still own more devices when compared with those below the age of 35, and they are using the same web services. These include cloud-based e-mail, movie streaming, photo storage, back-up services, file sharing and calendars. Not surprisingly, older people use online games less than Millennials, but both generations are adopting mobile devices in increasing numbers.

Technology is making it easier for libraries to move away from print-based collections to e-print collections that are accessible from anywhere at any time, providing the instant access the technology culture loves. However, it will be some time before e-print replaces a library’s print collection, and, until then, libraries will continue to support both print and e-print.

Public libraries are leading the way in efforts to promote e-print by supplying e-readers and e-books for checkout. Academic libraries have been slower to adopt e-books, but they are increasingly adding e-books to their collections. Some academic libraries are also experimenting with e-textbooks; for example, a 2012 pilot between the University of Minnesota and McGraw-Hill offered e-books at discounted prices to students registered for courses. School libraries lag behind both public and academic libraries, but according to a 2011 report, *Ebooks the New Normal: Ebook Penetration & Use in U.S. School (K-12) Libraries*, school purchases of e-books are increasing (Library Journal, 2011).
Technology is also providing new methods of communication between library clientele and librarians. While technology conservatives discuss the value of social networking, others are quick to embrace new social media sites. For the latter, social networking is an integral part of their lives and the number of enthusiasts is growing: “While the youngest generations are still significantly more likely to use social network sites, the fastest growth has come from internet users 74 and older: social network site usage for this oldest cohort has quadrupled since 2008, from 4% to 15%” (Zickuhr, 2010: 3). Millennials also appear to respond to social networking efforts that promote consultation with librarians (O’Connor and Lundstrom, 2011).

When people come into the library they should have a positive experience that blends technology with traditional methods for research. Access to resources, word processing, statistical and other applications are prerequisites for modern research. In addition to computers, libraries should provide resources such as scanners, large format printers, multimedia equipment, and, most importantly, the staff to help people use the equipment.

While older generations expect libraries to be solid, dependable sources of familiar books, Millennials are willing to experiment when databases are enhanced or web pages are redesigned, as long as these are intuitive. This requires librarians to carry out usability testing with a variety of groups in order to balance the demands between generations.

Table 2.2 compares library services with generational appeal. All but one of the services that would attract Millennials are also beneficial to older generations.
The culture of technology is causing librarians to rethink services and collections. Millennials are demanding new services; for example, electronic games (once considered children’s toys) are now learning objects: “We already know that gaming skills improve the performance of surgeons; that gaming environments are showing up in R&D laboratories; and that gaming is proving to have positive military, safety, educational, and learning benefits” (Abram, 2006: 101). A modern library may well have a gaming room with the dual purpose of providing entertainment and education. A library that emphasizes service over collections will look very different, as rows of stacks are replaced with dynamic special-purpose areas.

### Table 2.2 Generational preferences for library services

<table>
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<tr>
<th>Library activities</th>
<th>Millennials</th>
<th>Older generations</th>
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<td>Advocacy</td>
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<td>Assessment</td>
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<td>Interactive help</td>
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<td>Learning spaces</td>
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<td>Marketing services</td>
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<td>New spaces for new services</td>
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<td>Non-traditional or off-site locations</td>
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<td>Open source</td>
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<td>Repositories</td>
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<td>Social networking</td>
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A final word on the influence of technology

In 2012, four universities – the University of New South Wales, Purdue University, the University of Melbourne and the University of Sydney – announced that they had developed a single-atom transistor: “The single-atom transistor could lead the way to building a quantum computer that works by controlling the electrons, and thereby, the quantum information, or qubits” (ASM International, 2012: 16). The advantage of a qubit is that it can be a “1” and a “0” at the same time, whereas an ordinary computer is just “1” or “0,” i.e., on or off. This ability greatly speeds up mathematical computations and, by extension, the creation of data.

No one can predict what further inventions will come from this single development (or even if it is a practical development), but there is no shortage of engineers who will try, and if they succeed, software developers will follow. This is a key problem, because inventors can’t predict what ideas will emerge from their invention, nor how people will use and adapt them for unpredictable uses. For the immediate future, it is likely that technological innovations will continue to pour onto the market and affect every aspect of life. The question that remains is how much technology will change the behavior of people. What is certain, however, is that technological change will continue to be a force in our lives, and librarians must be prepared for a murky and untidy future.
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The Library 3.0 environment necessitates the adoption of new roles, skills and attitudes by librarians. Wigell-Ryynänen (2008) explains that librarians are not the only professionals in this generation who have to deal with such a change. Interestingly, she cites the example of doctors who are reportedly encountering more patients claiming to have diagnosed their own health conditions using information obtained through the Internet and going to the doctors only for prescriptions to enable them to purchase medicine. She suggests, therefore, that librarians have to acknowledge that sometimes information seekers may know the best answers to their own questions in their own contexts. She adds that this may arise in circumstances where there are no right or wrong answers: true answers (in the sense that they are helpful) are based on contextual relevance, which most of the time is best judged by the users themselves. Thus, she explains, the Library 3.0 environment creates a new demand for increased cooperation and collaboration between librarians and users in areas which were hitherto the preserve of professional librarians. She suggests that this emerging need requires a considerable attitude change on the part of the librarians, who now must make a choice of what to let go and what to defend.

There is a common misperception that all emerging information needs in the 3.0 environment require a technological response. Librarians should avoid this misperception, because sometimes users just feel a need to interact with a human being. In such cases, librarians may consider using human-based information services. One of the creative information service models which may be applicable in such Library 3.0 scenarios is the ‘borrow a person’ concept, which emerged in Denmark in 2000, also known as the ‘human library’ approach. The foundation of the concept is to create a forum for library users to meet people whose perspectives, experience or skills they are interested in. Libraries such as Toronto Public Library actually have volunteers who act as ‘human books’ whom users ‘borrow’ and converse with in the library. In Sweden, the concept has been expanded to enable library users to come face to face with their prejudices in the hope of altering their preconceived notions (Agence France-Presse, 2005). These prejudices could bear on sexual orientation, religion or xenophobia, for example. The ‘human library’ concept has been applied, with minimal variation, in public libraries in Canada, Denmark, Australia, New Zealand, Switzerland, Kazakhstan, Cyprus, Russia, the United Kingdom, the Netherlands, Japan, Thailand, South Korea, Israel, Mexico, Colombia, Malaysia, China, Brazil, Moldova and the United States of America. At the time of writing this book, no ‘human libraries’ seem to have been reported in Africa.

Librarians may customise the ‘human library’ concept to their circumstances. For instance, they may deploy the model in the form of events which do not have to be held within specific library premises or opening hours. Most have been held in public places, book clubs, student centres, members’ clubs or recreation parks. The ‘human
Library 3.0
library’ concept is similar to storytelling which is commonly integrated in services targeting children or blind persons. However, the main difference is that the storytellers are the experts or practitioners sharing their own real life experiences on a face-to-face, one-on-one basis with interested library users. The interaction is between real people having real conversations. The role of the librarian in such circumstances is to provide an enabling environment for the participants to interact optimally. Librarians may also consider participating in this service model as storytellers and sharing their own experiences in information-searching and retrieval. This sharing may help users not only to employ effective information-searching techniques and tools but also to understand the challenges librarians encounter while offering services in research and academic libraries. The librarians may also use the service to share their own personal stories, which may be of social or professional benefit to their user communities.

Whereas the Library 3.0 model provides techniques and tools for solving pressing library problems, it also focuses attention on the end-user pain points. Therefore, librarians should strive to perceive solutions from the perspective of users. However, in doing this, the librarians should not merely prescribe solutions but also create an environment in which they facilitate users’ solving their own problems as they encounter them. One way of supporting research and academic library users in solving their own problems is by creating platforms which facilitate learning, interaction, community, innovation, enthusiasm and progress (Abram, 2009). To this end 3.0 libraries should provide environments which cater for visual-spatial (picture-smart); verbal-linguistic (word-smart); melodic-rhythmic (music-smart); logical-mathematical (number-smart); bodily-kinaesthetic (body-smart); interpersonal (people-smart); and intrapersonal (self-smart) aspects of learning (Kalelioglu and Gulbahar, 2010). In this manner research and academic libraries become learning spaces conducive to brainstorming, experimentation and problem solving in which the users apply their efforts exhaustively to create and consume the services that meet their own needs closely.

Library 3.0 spaces should also be multipurpose, so as to provide facilities for social, academic, technological and economic endeavours. Research and academic libraries will need to shift from being spaces where people go to access information to being spaces where people go to create customised services and products which they consume and share. Therefore research and academic libraries should provide more tools to create or access information than the current readily available information resources (Hopkins, 2012). Access to such tools has the potential to turn mere readers into writers, listeners into composers and television watchers into television producers. So it will not be strange in the near future to encounter research and academic libraries which have art studios, drama studios, band practice rooms, theatres, fitness centres, game stations or planetariums (Frey, 2008). It seems inevitable that research and academic librarians will have to work to transform research and academic libraries from storehouses of information resources to powerhouses of knowledge and creativity. This transformation will support the realisation of a fully Library 3.0 environment, which is about empowered users. As specialist communities of library users emerge, research and academic librarians will require the skills to support increasingly complex categories of users. These groups of users may include creators, critics, collectors, joiners, spectators and those who have hitherto been inactive (Abram, 2009).
As mentioned earlier, library users are critical players in the Library 3.0 environment. Therefore, research and academic librarians should offer support to researchers, staff and students as collaborators and partners rather than as mere purveyors of predetermined information resources and services. Similarly, librarians should strive not to equate reading (library usage) with books (information resources). This shift requires librarians to be more helpful than has generally been the case by getting closely involved in the projects or assignments of users. They must go beyond pointing students and researchers to sections of the collection. Most users need guidance and even hand-holding in some cases. Librarians should consciously bring the human elements of information service provision to the librarian-user interaction and not rely too heavily on technology, because human expertise is an essential ingredient of an effective information service. Helping students with term papers and other assignments, for instance, builds deep relationships with them as users. Furthermore, as many library users become aware of the alternative information sources, research and academic librarians have to seek out users; they cannot afford to wait for the users to find them. Fortunately, research and academic library users working in a 3.0 environment are likely to seek out and choose librarians to work with on the basis of their history of meeting user information needs.

Another emerging issue in the 3.0 environment is the need for recreation in libraries. Most research and academic library users are usually busy and have little time, if any, to ‘play’. Many research and academic library users wish for a great personal experience in the library, which engages more than one of their senses. The libraries should address this need by going beyond their traditional boundaries to create environments in which users are able to have fun. With this emerging trend, it seems that ‘game librarianship’ – offering services such as games which create fun and facilitate play in libraries – may soon become a major function in research and academic libraries. Given that there are, as yet, no formal courses on gaming, ‘game librarians’ may learn only by playing.

Librarians should also harness the potentials of media convergence. An example of how this could be done is exemplified by the Information Gas Station (iGS) in Helsinki – referred to as the library without people – in which all information services are offered via the Internet. The answer to one reference question is read on radio once a week. The iGS also uses a mobile-phone-based information service, through which subscribers send out questions and receive answers from the other subscribers. All the correspondence is seen by all the subscribers. All the answers are archived for later reference. This service is easy to use and facilitates the subscribers’ access to services readily and at the point of need (Verho, 2008). Such services are important, given the high mobile-phone penetration rate in most parts of the world. Therefore, libraries will need to find more ways of using mobile phones effectively to provide services. If the pace of penetration remains as it currently is then mobile devices may well become the principal connection tool to the Internet in a few years to come. Librarians must strive to remain visible on mobile phone applications and services. One of the ways in which this could be done is by providing collections which are optimised for use on mobile phones. Similarly, librarians need to have information at their fingertips to be able to offer virtual services effectively. In a chat service, for instance, the emphasis would be on the rapid supply of accurate and links to appropriate information sources.
As mentioned in the previous chapters, Web 3.0 enables machines to find, share and communicate meaning. This is largely achieved through enhanced machine readability of content (Davis, 2011). Librarians working in the 3.0 environment should appreciate the power of the semantic web and master its tools. Librarians for many years have understood the connections between various types of data: in the 3.0 environment, however, they are now faced with the challenge of discerning how these connections will change or be influenced by social connectivity through networks. They should surmount this challenge by contributing to the creation of common links between data, resources and services (Davis, 2011). This challenge is critical because librarians – in spite of their immense expertise in information organisation, searching and retrieval – are often left out of important discussions pertinent to these issues, especially how to harness the potential of the vast reservoirs of information on the Internet. To achieve this effectively, librarians need to tell the other relevant professionals about what they are able to do and how this is achieved. The technological issues to which librarians may have to contribute include integrating the web with the real world around users; facilitating real-time updates from real-world objects; and effectively deploying ‘print on demand’ (POD) technology for out of print, rare, precious or generally inaccessible information resources, among others.

Oakleaf (2010) explains that research and academic libraries are under great pressure to prove their worth. Therefore librarians are increasingly being required to document and articulate the value of research and of academic libraries and their contribution to institutional missions and goals. Town (2011) also reports that some librarians have acknowledged that they have failed to communicate the value of their services effectively and that there is an increasing risk that much of what libraries actually do may be invisible in a virtual environment. It is becoming increasingly important for libraries to demonstrate that the services that they provide contribute substantially to the achievement of institutional goals. Librarians working in the 3.0 environment will be expected to conceptualise, compile and disseminate reports to donors, sponsors, parent institutions and other stakeholders, demonstrating their worth. To accomplish this, the librarians will need to devise a creative way of demonstrating success. As the Reference and User Services Association (RUSA, 2004) explains, the success of any information service transaction is not only judged by the quality of the information accessed but also by the positive or negative impact of the librarian-user interaction. In its behavioural performance guidelines for reference and information service providers, the association avers that to achieve a positive impact, librarians need to be approachable and accessible; demonstrate high interest in users and their questions; exhibit strong listening and inquiring skills; possess technical expertise in searching and retrieval exemplified by a mastery of search tools and techniques; and follow up to assess success (RUSA, 2004).

It is evident from the foregoing that although the basic professional tenets of librarianship remain the same, the methods, tools, scope and environment of information delivery continue to change dramatically (Special Libraries Association, 2003). Myburgh (2003) describes the emerging information environment as being hypertext, networked and digital (virtual) and characterised by disintermediation, convergence, connectedness, competition, globalisation, the information explosion and vacillating
funding provisions. Consequently, research and academic libraries, just like the other library types, are continually facing new challenges and expectations from stakeholders. For instance, the LIBER 43rd Annual Conference, ‘Research Libraries in the 2020 Landscape’ call for papers emphasises scholarly communication and the role of the librarian in facilitating access. The information landscape is currently characterised by ubiquitous, digitised, indexed and online access to content in which researchers often complete their searches for information online without visiting a physical library or consulting a librarian. The topics in the LIBER Conference Programme all also demonstrate the perception that the research libraries of the future will be multi-institutional entities collaborating with multiple researchers, stakeholders and information providers; open to change and to embracing discovery, and largely digital, holding federated collections organised and delivered digitally through converged ubiquitous media. Such libraries will support the creation of research information, connect research communities, and provide the physical and virtual infrastructure to facilitate their use. Taken together, the indication is that the dynamic information environment requires versatile and better-educated information professionals who, besides librarianship and technical information skills, also possess good change management, communication, leadership and people management skills.

### 4.1 Core competencies of ‘Librarian 3.0’

Core competencies are skills, knowledge, abilities and attributes that employees are expected to possess so as to contribute successfully in an organisational context (McNeil, 2002). A competency index defines the requirements needed for workers to perform and meet the needs of a specific job (Rothwell and Lindholm, 1999). The index can be used for benchmarking and evaluation and to determine education requirements for positions. A competency index deconstructs positions into knowledge, skills, values and attributes which determine the success of the bearers (Soutter, 2007) and is much broader than the traditional task-oriented skills included in job descriptions (McNeil, 2002).

Some scholars of librarianship suggest that all librarians face a role shift in which traditional competencies become less prominent. Conversely, they argue that there is a greater focus on personal than on technical competencies (Myburgh, 2003; Gutsche, 2010). Kennan, Willard and Wilson (2006) and Gutsche (2010) also report that there seems to be a gravitational pull towards ICT skills which include the effective use of the Internet, practical software and hardware management, and database design skills. In spite of the fact that most libraries currently operate on a sophisticated technical platform, Gutsche (2010) suggests that librarians should not depend entirely on technology but should continue to make efforts to offer services at a human level with a human touch.

Opinion is divided on whether each librarian should possess all the competencies a library needs. Some practitioners argue that ‘the more the merrier’, while others hold the view that one librarian should just have the essential skills defined by the context of operation. The former group explain that all-rounder librarians bring a rich
mix of skills needed to respond to emerging and sometimes expert user needs. This mix is especially essential when dealing with the complex issues encountered in research and academic libraries. Multiple skills also provide a bridging mechanism by means of which librarians can interact with other professionals such as journalists, marketers, producers, ICT experts, business managers, administrators, recreationists, sociologists, doctors, linguists, lawyers and educationists who have the potential to enrich librarianship and benefit the users more. In fact, Saw and Todd (2007) suggest that future research and academic librarians should be capable of wearing many hats, all at the same time. Therefore, they suggest that such librarians should have the competencies to perform the roles of researcher, counsellor, planner, manager, assessor, team member, problem solver and computer-printer repairer. They conclude that such librarians require good communication, people, customer relations, language proficiency, friendliness, team working, training, ICT and advanced information-searching skills to accomplish these tasks effectively. The libraries, however, must find ways of maximising the benefits of these skills. The latter group, on the other hand, argues that libraries can benefit more from a synergy of skills from different librarians than from multi-skilled individuals (Partridge, Lee and Munro, 2010).

Verho (2008) reports that Kaisa Lammi and Reeta Eloranta of the University of Tampere conducted a job market analysis of the skills librarians will need to have in 2015 and concluded that the skills would include an aptitude for customer-orientation, networking, information acquisition skills, tolerance of uncertainty and problem-solving. Verho (2008) concurs and suggests that the five areas of skill that will increase most by 2015 are legal issues pertaining to information, digital transaction management, information management, cultural knowledge, knowledge of the publishing world and expenses. Westhuizen and Randall (2005) identify a number of skills as necessary for information specialists supporting research. These include skills in facilitation of learning processes, value addition to products, current awareness, web newsletter support, searching techniques, metadata management, business sense, web product development, copyright knowledge, communication, evaluation of information, knowledge of research tools, e-scholarship, proficiency in digitisation processes, leadership, client relationship management, change management, flexibility in management, mentorship, knowledge management, ICT literacy, and critical thinking. Abram (2009) also suggests that modern librarians should have reading, numeracy, critical, social, computer, web, content, writing, news, technology, information, media, adaptive, research and academic literacy. Similarly he suggests that effective librarians have openness, understanding, learning, appreciation, improvisation, self-change and attention skills. He adds that they should also master emerging technological tools that facilitate their ability to create, evaluate, analyse, apply, understand and remember information which is valuable to their users.

WebJunction (2009) presents a detailed competency index for a wide spectrum of librarianship fields. The index was aggregated from competency definitions of several professional associations as well as from practitioners drawn mainly from the United States of America. The index covers library management, personal and interpersonal, public services, technical services, and technology skills. Library management includes competencies to manage budgets, community relations, library physical
space, laws, procedures and policies, marketing, organisational leadership, personnel management, project management, staff training and development, and strategic planning. The personal and interpersonal competencies include communication, customer service, ethics and values. Public service competencies include access services, specialised user (adult, youth, and children) services, collection development and patron training. The technical competencies cover acquisition and processing, cataloguing, collection management and preservation of information resources. The technology competencies include electronic communication, core hardware, Internet, core software, core operating systems, applications, web design and development, enterprise computing, networking and security, server administration, technology project management, technology policy development and technology training.

‘Librarians 3.0’ will require many sets of competencies to handle the emerging information management techniques, tools and user expectations effectively. In research and academic libraries, 3.0 librarians will need conventional librarianship technical and professional skills; personal and interpersonal skills; information and communication technology skills; business management skills; and research skills.

4.1.1 Technical professional skills

Although research and academic librarians currently perform more than the traditional tasks, many practitioners and scholars emphasise that technical librarianship skills are still important (McNeil, 2002; Shiholo and Ocholla, 2003; Soutter, 2007). These technical competencies generally revolve around the management of information resources and information services as well as proficiency in information management and dissemination tools and techniques. Specifically, the core technical skills which research and academic librarians operating in a 3.0 environment will find invaluable include an understanding of librarianship theory; information resources acquisition, organisation and management; knowledge and information management; classification and cataloguing; information resources preservation; and reference and user services. These skills will enable the librarians to manage the full life cycle of information, that is, from creation or acquisition to disposal; to build collections of all formats through ownership, access and other means; to develop in-depth knowledge of the content of the collection; to provide best access to the collection physically and virtually; and to maintain the collection through suitable preservation and conservation techniques.

It is also paramount that the librarians possess skills to provide cost-effective, user-centric information services; review the services constantly; employ evidence-based approaches to information service design and delivery; provide information and not just information resources; and empower users to serve themselves. Thus, they will require the skills to plan and implement a suitable circulation and lending service, inter-library lending, reference, stock management and binding services to meet the interests of library users.

The technical tools which research and academic librarians need to master include online and offline databases; indexing, cataloguing, classification and abstracting tools; citation and reference management tools; library management systems; documentation, reporting and publication management tools; search engines; thesauri,
bibliographies and online public access cataloguing systems. Further, progressive librarians should not shy away from using non-traditional approaches to information organisation and should readily use tagging, tag clouds and folksonomies, among others, where appropriate. They should also readily embrace non-textual content such as videos, pictures, sight and sound (Singhal, 2010).

### 4.1.2 Personal and interpersonal skills

Partridge, Lee and Munro (2010) argue that some personal traits may be more important to some categories of librarians than technical skills. Some of these traits for research and academic librarians include passion, enthusiasm, good grooming, ‘spark’, resilience, curiosity, self-drive, and open-mindedness. Other potentially useful attributes include independence, moral integrity, action-orientation, patience, diplomacy, sensitivity, personal commitment and customer-orientation (Myburgh, 2003). It is also important that research and academic librarians possess a flexible and an adaptable attitude. Gutsche (2010) underscores the need for flexibility amongst librarians and explains that, in an earthquake, it is the rigid structure that is most likely to fail, while flexible structures bend and sway and then settle when the earthquake is over. Similarly, research and academic librarians should be open and adaptable to new techniques and tools so as to offer relevant information services and products.

The new information ecology in research and academic libraries demands that librarians no longer offer services from behind a desk. Thus the new role of librarians is offering not only a good service but also a good customer experience, whether physical or virtual. This new role is based on the understanding that librarians currently have to appreciate the fact that critical determinants of effective information service delivery have changed, are changing, and will continue to change (Solomon, 2011). Wittenborg (2011) also explains that the comfortable, predictable librarianship routines are no longer tenable and adds that only the librarians who learn how to thrive in the new environment will survive. Therefore research and academic librarians working in this new environment will perform the roles of educator, trainer or guide to enhance users’ capacity to change with the times while creating and enjoying the information experience they desire. This facilitative role is particularly critical since there are many complex issues and tools in the emerging information environment that researchers, students and scholars may not handle effectively on their own (Partridge, Lee and Munro, 2010).

Research and academic librarians working in 3.0 environments also need a good understanding of the privacy requirements of users. This understanding can enable them to create systems which guarantee user privacy while facilitating acceptable interactions. Library users should feel confident to use the library without fearing that information generated from or related to their usage may be shared with or accessed by other users or institutional authorities. Nonetheless, librarians should promote an environment of intellectual freedom where users access and share information freely without bias or unnecessary censorship. This level of scholarly freedom can be achieved through inclusive collection development, and unbiased or equitable service policies. It can also be achieved by setting and promoting ethical practices within the library.
Cohen (2007) proposes a seventeen-point manifesto of the desired ethos and attitudes of the modern librarian. The manifesto calls on librarians to recognise changes in libraries and users and to adapt to them without sticking to, or defending, the status quo, but by participating actively in moving the library forward through proposing and experimenting with new services and products. The manifesto also requires librarians to recognise the role of users in determining what and in what manner they are served. In addition, the manifesto urges librarians to be willing to go where the users are. This advice is important because researchers, students and scholars are increasingly migrating online and trying to bring them back to the offline environment seems futile.

Research and academic librarians working in a 3.0 environment also need life skills such as problem solving, critical thinking, effective communication, teamwork and ethical thinking which complement their discipline-specific skills and professional knowledge (Partridge and Hallam, 2004). Besides, they also need good communication skills. In fact, Partridge, Lee and Munro (2010) and WebJunction (2009) propose that 3.0 librarians need more than ordinary oral and written communication skills to engage effectively with diverse audiences, using a variety of tools and techniques. They suggest that these librarians should also have advocacy, lobbying, negotiation, diplomacy, conflict resolution, marketing, and promotion skills. In addition they believe that the librarians should have good presentation skills.

‘Librarians 3.0’ should also be competent in community relations. This competency would enable the librarians to demonstrate the value and impact of the library effectively; build support for the library; maintain positive public relations; and form strategic partnerships. The skills would be useful for creating a warm, friendly, safe, and healthy physical, social and virtual library environment that encourages the members of the community to use the library (WebJunction, 2009). ‘Librarians 3.0’ should learn to establish connections with information and not libraries as such; embrace the role of a teacher; adopt a marketing approach to library service design and delivery; and have confidence to embrace the future (Saint-Onge, 2009). Partridge, Lee and Munro (2010) also propose that modern librarians should have collaboration, membership management, events coordination, networking and teamwork skills. They also add that progressive librarians collaborate not only with individuals but also with groups, associations, communities and institutions. Myburgh (2003) adds that in a globalised world, librarians now need to understand at least one language spoken by the core communities served, in addition to a shared community language (lingua franca).

4.1.3 Information and communication technology (ICT) skills

Given the prominence of information and communication technology in the emerging research and academic library ecosystems, various levels of technology competencies have been proposed as critical for research and academic librarians. A basic understanding of computer hardware and software, the ability to perform basic Internet tasks, including searching and use of social networking tools, and ICT security are some of the important technology competencies ‘Librarians 3.0’ need. King (2007) also proposes a set of ICT skills a librarian should possess. The skills include the ability to write and post to a blog; create, upload, and edit photographs, short videos,
Librarians 3.0 should have adequate skills to enable them to manage their email, hardware, Internet, operating systems, software applications, servers, computer networks and electronic publishing (including web publishing) according to WebJunction (2009). Besides, the librarians should be able to plan and manage technology projects effectively. They should also be able to impart the same skills to users. They should also understand the power and opportunities of emerging web technologies and help the end users to embrace the technologies to satisfy their information needs (Singhal, 2010). Similarly, Fadehan and Ali (2010) suggest that modern librarians should have competencies in imaging technology, optical character recognition, web mark-up languages, indexing and database technology, user interface design, open source information management software, creative commons, web server management, web publishing, networking, desktop publishing, multimedia design, automation of library processes, storage technologies, and ICT systems administration. These skills would enable librarians to connect users with technology in their information context and also to mix and remix the e-resources and print materials to meet the needs of library users.

Librarians working in 3.0 environments definitely need to be knowledgeable about the semantic web. Davis (2011) suggests that librarians can best acquire this knowledge by getting and using portable devices and profiles; embracing the full potential of social media; adopting a personalised service mentality and treating library users as individual members of communities; working with appropriate tools, techniques and machines to deliver dynamic content; getting involved in the underlying organisation of information through the development of ontologies and other semantic web standards; and supporting users in filtering out information that they do not need, as well as helping them to establish relationships between resources and with people such as authors, donors, opinion leaders and other key stakeholders in their communities.

Partridge, Lee and Munro (2010) offer a slightly different view and suggest that the centrality of ICT skills for modern librarianship may have been overemphasised. They admit that the skills are essential but point out that technology is a channel for the exercise of the professional skills of librarianship and not the purpose. They suggest that librarians should have essential ICT skills to enable them to understand what is available, what it can do for the libraries and how to use it. They seem to suggest that advanced ICT tasks in the library can be undertaken by ICT specialists either within the library or in the corporate ICT units. Stephens (2006) also holds this view and suggests that modern librarians should control technolust by not adopting technologies just because it is ‘cool’ to do so.

### 4.1.4 Management skills

WebJunction (2009) suggests that a progressive librarian should have the competency to understand budgets and funds management. Thus, ‘Librarians 3.0’ should understand basic financial and budgeting terminology and processes. They should also
have the capacity to seek and manage funding sources through appropriate resource mobilisation strategies. In addition librarians should provide a strong leadership for all library stakeholders and teams. Change management is a critical component of management competencies that ‘Librarians 3.0’ should have, together with basic human-resource management skills enabling them to recruit, empower, motivate and appraise the library workers – including consultants and volunteers – to deliver the library services effectively. Partridge and Hallam (2004) add that progressive librarians, such as ‘Librarians 3.0’, should be conversant with risk management, time management and project management.

‘Librarians 3.0’ should also be able to shoulder relevant legal responsibility in their institutions. Therefore, they should understand the relevant legal issues and apply the appropriate legal provisions relating to information storage, organisation and access; standards of professional conduct; legal deposit; intellectual property and copyright (Myburgh, 2003; Partridge and Hallam, 2004; Kennan, Willard and Wilson, 2006; WebJunction, 2009). Librarians should also be able to draft legal policies and procedures appropriate for the needs of the library with minimal support from legal experts.

It is also important that ‘Librarians 3.0’ understand the place of the library in the parent institution. They should understand the ‘big picture’ and align the library to the parent organisation’s vision and mission. They should be able to develop strategic plans, set priorities and allocate resources to achieve them. They should, furthermore, be able to calculate and demonstrate the return on investment for the library to the stakeholders. Therefore, they should have the skills to manage information organisations and agencies as business entities. They should be competent to supervise the day-to-day administration of the library. Where an opportunity exists, ‘Librarians 3.0’ should moreover have the competencies to plan and supervise the construction of library buildings and be able to manage the repair, rehabilitation, partitioning, furnishing, and general maintenance of the library premises.

### 4.1.5 Research skills

Research competency is critical for research and academic librarians. Partridge, Lee and Munro (2010) suggest that all librarians ought to have research skills to enable them to embrace evidence-based practices. They specifically point out that good research skills would enable librarians to make the best decisions, develop best practices and establish benchmarks. They also argue that good research skills would enable librarians to evaluate the library’s resources and services and align them to the emerging needs of users and other stakeholders. Partridge and Hallam (2004) and Singhal (2010) also explain that research skills enable librarians to remain current regarding developments in their fields of interest and those of their stakeholders.

This competency would enable research and academic librarians to know the top research issues in their institutions as well as the top researchers and publishers in those areas. They would also be able to track breaking news and publications in those areas. Adequate research skills would also enable research and academic librarians to engage the researchers in their domains effectively (Walker, 2009). Table 4.1 presents the proposed competency index of research and academic ‘Librarians 3.0’.
Table 4.1 Competency index of research and academic ‘Librarians 3.0’

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>Professional foundation</td>
<td>Research and academic ‘Librarians 3.0’ should have:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. a formal post-graduate professional library and information science training or its equivalent;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. an understanding of the theory of librarianship and information management;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. knowledge of the history of libraries and information materials (books, compact discs, computers and many more);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. an understanding of the trends of the profession (historical, present and future);</td>
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<tr>
<td></td>
<td></td>
<td>5. the ability to distinguish and apply the common library typologies and models;</td>
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<tr>
<td></td>
<td></td>
<td>6. proficiency in library and information centre operations, policies and procedures;</td>
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<tr>
<td></td>
<td></td>
<td>7. an understanding and appreciation of the indigenous knowledge of the research community;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. knowledge of the socio-economic issues in the user community, such as the fight against HIV/AIDS, conservation of the environment, and food security, among others.</td>
</tr>
<tr>
<td>Information resources management</td>
<td></td>
<td>Research and academic ‘Librarians 3.0’ should have the training and skills to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. participate in and manage the research information life cycle;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. evaluate, select, acquire, process, disseminate, store and dispose print and electronic research information resources;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. organise the information resources in a way that attracts researchers and enhances ease of access and use;</td>
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<tr>
<td></td>
<td></td>
<td>4. maintain research information resources for later use (preservation of physical collection and hyperlinks);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. understand and work with multimedia formats, including social media;</td>
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<tr>
<td></td>
<td></td>
<td>6. apply appropriate collection development approaches and policies to build adequate research collections for scholarship and quick information;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. provide ready access to the information resources at the point of need through appropriate lending, circulation, inter-library loan online and offline;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. develop and deploy appropriate disaster preparedness and recovery systems.</td>
</tr>
</tbody>
</table>
Research and academic ‘Librarians 3.0’ should be:
1. committed to providing information rather than information resources only;
2. able to design and deploy appropriate (user-centric) information services with the input of the key stakeholder segments;
3. diligent in empowering the users to serve themselves through suitable information literacy programmes;
4. conversant with library service models and capable of selectively deploying them in a way that meets the information needs of the users;
5. proficient in information searching and retrieval using a wide array of online and offline tools;
6. able to constantly review the information services in tandem with research and librarianship trends.

Research and academic ‘Librarians 3.0’ should be proficient in:
1. the design, management and use of the relevant online and offline information databases;
2. indexing, classification, cataloguing and abstracting schemes and tools;
3. social media information-management tools and concepts including tagging, folksonomies and social bookmarking.

In the line of duty, research and academic ‘Librarians 3.0’ exhibit:
1. passion, enthusiasm, resilience, approachability, curiosity, open-mindedness, independence, diplomacy, sensitivity, flexibility, innovativeness, critical thinking and adaptability;
2. moral uprightness according to the virtue systems of the user community;
3. balanced lifestyle;
4. willingness to take calculated risks.

Research and academic ‘Librarians 3.0’ should possess:
1. excellent oral and written communication;
2. proficiency in the languages the user community understands best;
3. ability to present ideas effectively;
4. skills and tools to facilitate and act on users’ feedback;
5. ability to impart knowledge effectively.

Table 4.1 Competency index of research and academic ‘Librarians 3.0’ (cont.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information services design and delivery</strong></td>
<td>Research and academic ‘Librarians 3.0’ should be:</td>
<td>1. committed to providing information rather than information resources only;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. able to design and deploy appropriate (user-centric) information services with the input of the key stakeholder segments;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. diligent in empowering the users to serve themselves through suitable information literacy programmes;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. conversant with library service models and capable of selectively deploying them in a way that meets the information needs of the users;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. proficient in information searching and retrieval using a wide array of online and offline tools;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. able to constantly review the information services in tandem with research and librarianship trends.</td>
</tr>
<tr>
<td><strong>Information management tools and techniques</strong></td>
<td>Research and academic ‘Librarians 3.0’ should be proficient in:</td>
<td>1. the design, management and use of the relevant online and offline information databases;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. indexing, classification, cataloguing and abstracting schemes and tools;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. social media information-management tools and concepts including tagging, folksonomies and social bookmarking.</td>
</tr>
<tr>
<td><strong>Personal and interpersonal attributes and attitude</strong></td>
<td>In the line of duty, research and academic ‘Librarians 3.0’ exhibit:</td>
<td>1. passion, enthusiasm, resilience, approachability, curiosity, open-mindedness, independence, diplomacy, sensitivity, flexibility, innovativeness, critical thinking and adaptability;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. moral uprightness according to the virtue systems of the user community;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. balanced lifestyle;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. willingness to take calculated risks.</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>Research and academic ‘Librarians 3.0’ should possess:</td>
<td>1. excellent oral and written communication;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. proficiency in the languages the user community understands best;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. ability to present ideas effectively;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. skills and tools to facilitate and act on users’ feedback;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. ability to impart knowledge effectively.</td>
</tr>
</tbody>
</table>
Table 4.1 Competency index of research and academic ‘Librarians 3.0’ (cont.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public relations</td>
<td>Research and academic ‘Librarians 3.0’ should:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. create an environment of mutual respect and trust around the library;</td>
<td>1. create an environment of mutual respect and trust around the library;</td>
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<tr>
<td></td>
<td>2. negotiate confidently and persuasively;</td>
<td>2. negotiate confidently and persuasively;</td>
</tr>
<tr>
<td></td>
<td>3. participate in the community activities (community relations);</td>
<td>3. participate in the community activities (community relations);</td>
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<tr>
<td></td>
<td>4. work effectively with suppliers and vendors;</td>
<td>4. work effectively with suppliers and vendors;</td>
</tr>
<tr>
<td></td>
<td>5. respect and appreciate divergent views;</td>
<td>5. respect and appreciate divergent views;</td>
</tr>
<tr>
<td></td>
<td>6. genuinely value all users;</td>
<td>6. genuinely value all users;</td>
</tr>
<tr>
<td></td>
<td>7. understand organisational dynamics (politics);</td>
<td>7. understand organisational dynamics (politics);</td>
</tr>
<tr>
<td></td>
<td>8. possess conflict resolution acumen;</td>
<td>8. possess conflict resolution acumen;</td>
</tr>
<tr>
<td></td>
<td>9. market and promote library services and products.</td>
<td>9. market and promote library services and products.</td>
</tr>
<tr>
<td>Networking</td>
<td>Research and academic ‘Librarians 3.0’ should have the skills to:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. create mutually beneficial partnerships and alliances;</td>
<td>1. create mutually beneficial partnerships and alliances;</td>
</tr>
<tr>
<td></td>
<td>2. participate effectively in the relevant professional associations locally, regionally and internationally;</td>
<td>2. participate effectively in the relevant professional associations locally, regionally and internationally;</td>
</tr>
<tr>
<td></td>
<td>3. create and sustain inter-departmental linkages and partnerships, especially with the ICT department;</td>
<td>3. create and sustain inter-departmental linkages and partnerships, especially with the ICT department;</td>
</tr>
<tr>
<td></td>
<td>4. harness essential synergy in the department, organisation and beyond;</td>
<td>4. harness essential synergy in the department, organisation and beyond;</td>
</tr>
<tr>
<td></td>
<td>5. mobilise resources within the organisation, donors and community;</td>
<td>5. mobilise resources within the organisation, donors and community;</td>
</tr>
<tr>
<td></td>
<td>6. organise events and programmes which enhance the visibility and usability of the library (art galleries, reading nights, and many more);</td>
<td>6. organise events and programmes which enhance the visibility and usability of the library (art galleries, reading nights, and many more);</td>
</tr>
<tr>
<td></td>
<td>7. lead and be part of a team.</td>
<td>7. lead and be part of a team.</td>
</tr>
<tr>
<td>Information and Communication Technology (ICT)</td>
<td>Research and academic ‘Librarians 3.0’ should have the capacity to:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. develop ICT access and usage policies;</td>
<td>1. develop ICT access and usage policies;</td>
</tr>
<tr>
<td></td>
<td>2. build the capacity of users, especially older users, in the use of the relevant ICT tools and systems;</td>
<td>2. build the capacity of users, especially older users, in the use of the relevant ICT tools and systems;</td>
</tr>
<tr>
<td></td>
<td>3. evaluate, select, acquire, configure and maintain basic ICT systems relevant to the library;</td>
<td>3. evaluate, select, acquire, configure and maintain basic ICT systems relevant to the library;</td>
</tr>
<tr>
<td></td>
<td>4. install, update and monitor basic ICT security systems including antivirus utilities and firewalls;</td>
<td>4. install, update and monitor basic ICT security systems including antivirus utilities and firewalls;</td>
</tr>
<tr>
<td></td>
<td>5. administer Intranets, web servers and basic local area network (LAN) systems;</td>
<td>5. administer Intranets, web servers and basic local area network (LAN) systems;</td>
</tr>
<tr>
<td></td>
<td>6. work with open-source tools and systems.</td>
<td>6. work with open-source tools and systems.</td>
</tr>
</tbody>
</table>
## Table 4.1 Competency index of research and academic ‘Librarians 3.0’ (cont.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware and software</strong></td>
<td></td>
<td>Research and academic ‘Librarians 3.0’ should be able to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. configure and troubleshoot basic ICT hardware such as computers, printers, scanners, digital cameras, external hard discs and photocopiers, among other items of equipment;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. install and configure basic operating systems, applications and databases.</td>
</tr>
<tr>
<td><strong>Internet</strong></td>
<td></td>
<td>Research and academic ‘Librarians 3.0’ should have the capacity to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. install, configure and monitor an Internet connection through wireless, cabled and USB equipment;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. perform advanced information searches on the Internet using search engines and information gateways, among other tools.</td>
</tr>
<tr>
<td><strong>Web publishing</strong></td>
<td></td>
<td>Research and academic ‘Librarians 3.0’ are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. proficient with web content-management systems, especially open-source systems such as Joomla, Drupal and others;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. conversant with web content development tools such as Dreamweaver, among others;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. able to script and edit basic HTML and XML codes;</td>
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<td></td>
<td></td>
<td>4. comfortable with common FTP packages to manage web site files;</td>
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<tr>
<td></td>
<td></td>
<td>5. conversant with web animation packages such as Flash;</td>
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<tr>
<td></td>
<td></td>
<td>6. able to post and update content on social media tools such as Twitter, Flickr, blogs, MySpace, Facebook, SlideShare, wikis and RSS;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. able to promote an online publication effectively using search engines, online directories and other systems.</td>
</tr>
<tr>
<td><strong>Desktop publishing (DTP)</strong></td>
<td></td>
<td>Research and academic ‘Librarians 3.0’ should be able to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. design and publish basic posters, newsletters, briefing notes and other publications using common DTP packages such as InDesign, Adobe PageMaker and Adobe Digital Publishing Suite, among others;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. edit and integrate photos and other graphics into publications using Adobe Photoshop, among others.</td>
</tr>
</tbody>
</table>

*(Continued)*
Table 4.1  Competency index of research and academic ‘Librarians 3.0’ (cont.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Digitisation</td>
<td>Research and academic ‘Librarians 3.0’ should be conversant with: 1. scanners and other optical character-recognition tools and systems; 2. digital cameras; 3. smartphones; 4. photocopiers; 5. electronic archiving tools and techniques; 6. audio and video capture, editing and publication.</td>
</tr>
<tr>
<td>Management</td>
<td>General management</td>
<td>Research and academic ‘Librarians 3.0’: 1. understand the day-to-day administration and supervisory management of a library or information centre; 2. perceive the big picture and fits the library functions into the vision and mission of the parent organisation; 3. plan, set priorities and evaluate the performance of the library; 4. participate actively in organisational strategic planning; 5. calculate and demonstrate the return on investment in the library; 6. manage library ergonomics and physical facilities including furniture, shelves, decoration, cleaning, lighting and ventilation; 7. manage change; 8. recruit, train, mentor, inspire and retain professional and administrative staff essential for the success of the library; 9. understand organisational behaviour.</td>
</tr>
<tr>
<td></td>
<td>Funds management</td>
<td>Research and academic ‘Librarians 3.0’ are able to: 1. perform basic book-keeping tasks; 2. develop and manage the library’s budgets; 3. manage the library’s grants.</td>
</tr>
<tr>
<td></td>
<td>Project management</td>
<td>Research and academic ‘Librarians 3.0’ have the capacity to: 1. write project proposals; 2. perform day-to-day management of the library’s special projects; 3. monitor and evaluate the library’s special projects; 4. compile and disseminate project reports.</td>
</tr>
</tbody>
</table>
Table 4.1 Competency index of research and academic ‘Librarians 3.0’ (cont.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal affairs</td>
<td></td>
<td>Research and academic ‘Librarians 3.0’: 1. understand and apply copyright and other intellectual property laws; 2. understand, interpret and apply freedom-of-information policies, right of access to information and other provisions in their jurisdiction.</td>
</tr>
<tr>
<td>Research</td>
<td>General</td>
<td>Research and academic ‘Librarians 3.0’: 1. possess qualitative and quantitative research skills; 2. participate in the entire research life cycle; 3. understand the research trends, literature and researchers in the institution’s area(s) of research interest; 4. conduct their own research and publish in peer-refereed journals; 5. support researchers and other users in reference and research output management.</td>
</tr>
</tbody>
</table>

Source: Adapted from Kwanya, Stilwell and Underwood (2012).

4.2 Core competencies of users in Library 3.0

A true Library 3.0 dream can be realised only when librarians and users collaborate to create an appropriate information experience. Library 3.0 users collaborating with librarians will, if they so desire, create new or customise existing library services and products to meet their personal needs and those of their friends or partners. ‘Librarians 3.0’ need to empower and also expect users to play a bigger role in creating a unique library experience fitting their context, just as the librarians, research and academic library users working in a 3.0 environment need certain competencies to make the best use of the information opportunities therein. This section discusses some of the competencies which Library 3.0 users need.

4.2.1 Information competency

Also known as information literacy or information fluency, information competency is perceived as the ability of individuals to recognise their own information needs and satisfy them effectively. Information Literacy Competency Standards for Higher Education are being revised by the ACRL task force over a two-year period ending in 2014. The ACRL defines information-competent persons as those who are able to determine the extent of information needed; access the needed information effectively and efficiently; evaluate the information and its sources critically; incorporate selected information into their existing knowledge base; use information effectively
to accomplish a specific purpose; understand the economic, legal, and social issues surrounding the use of the information; and access and use the information ethically and legally.

Information competency encompasses tool literacy, resource literacy, social-structural literacy, research literacy, publishing literacy, emerging technology literacy, and critical literacy. Shapiro and Hughes (1996) explain that tool literacy is the ability to understand and use current information management tools; resource literacy is the ability to understand the form, format, location and access methods of information resources; social-structural literacy is knowing how information is socially situated and produced; research literacy is the ability to use various tools and methods relevant to the work of a researcher or scholar; publishing literacy is the ability to format and publish research and other ideas electronically; emerging technology literacy is the ability continuously to adapt, understand, evaluate and make use of emerging innovations in information technology; while critical literacy is the ability to evaluate critically the intellectual, human and social strengths and weaknesses, potentials and limits, benefits and costs of information.

Information competency is steadily gaining recognition as one of the important skills which aid people’s pursuit of a better quality of life. In the United States of America, for instance, universities, as well as relevant professional and other associations, such as the American Association of Community Colleges (AACC), American Library Association (ALA), and National Forum on Information Literacy (NFL), have set minimum information-competency requirements which all students must attain before they can be allowed to graduate from a university. There are similar trends in a number of European and Asian countries as well.

The need for information competency as a critical requirement for research and academic library users will continue to grow as Library 3.0 becomes widely adopted. Whether working independently, with the librarians or with other library users, Library 3.0 users require the ability to define their information needs and devise appropriate strategies for satisfying them, using information resources and services available offline or online. The users also require the ability to evaluate the usefulness and appropriateness of information in the context of their needs.

4.2.2 Bibliographic competency

Library 3.0 users need a good understanding of online and offline library bibliographic tools such as catalogues, databases, indexes, thesauri, checklists, accession lists, search engines, bibliographies and lists of abstracts, among others, as well as knowing what human experts offer. They also need to be proficient in information searching methods, processes and retrieval strategies, so as to make use of the bibliographic tools effectively. Thus, they require an ability to analyse their own information needs and formulate key words and queries which yield relevant results to satisfy them. Research and academic library users, particularly, should be able to break down their information needs into searchable units, translate them into key words, search for them using basic and/or advanced techniques and tools and retrieve up-to-date, relevant and adequate information (Anyira, 2011).
In an apomediated 3.0 environment, librarians are required to build the capacity of library users to use bibliographic tools through myriad forms of bibliographic instruction. One way of doing this is through the development and deployment of physical or digital user guides which provide practical instructions to users on how best to locate and use the library tools and materials to satisfy their information needs. User guides may also provide the contact details of information workers the users can reach if they need any direct human support while using the library. Another way of facilitating the best use of the library bibliographic tools by users is through creating interfaces between the various tools, enabling users to search all available resources from one single physical or virtual location. Given the diversity of bibliographic tools across disciplines, research and academic libraries may also provide user education and guides which are specific to the subject or research interests of the parent institutions. This can be achieved in academic libraries, for instance, through course-related instruction programmes. User education can also be based on specific tasks: thus, research and academic libraries may organise clinics on specific term papers or research tasks such as writing references.

Bibliographic competency prepares researchers, students and scholars for a lifelong relationship with their libraries. Bibliographic instruction is, therefore, a way to create a lasting bond between users and a library through marketing library services, sources and expertise. It also helps to reinforce the place of the library as an integral component of research and academic programmes, just like laboratories and studios. It creates a long-term framework for a consistent and continuous dialogue between the library and users.

4.2.3 Information resource competency

Information resources and sources are becoming more vast and complex by the day. OCLC in its 2003 information trends report (OCLC, 2003) suggested that the most significant challenge libraries face is that the universe of materials that a library must assess, manage and disseminate is not simply shifting to a new set or type of materials, but rather becoming a much more complex universe of new and old, commodity and unique, published and unpublished, and physical and virtual. The information resources for which research and academic libraries are likely to provide access include physical or digital magazines, journals, databases, newspapers, books, blogs, expert opinions, web pages, podcasts, videos and slides, to mention but a few. The information content of these resources also varies from brief summaries to full text articles. Library users need to be able to identify the available types of information resource. They should also be able to select the information resources which have a greater potential for meeting their needs from the wide range of alternatives. Importantly, they should also be able to locate the needed information within the resource and extract it for the intended use.

One way of enhancing information resource competency is through the user-driven collection development approach, which most 3.0 libraries have now adopted. This approach requires the library users to have the necessary skills to select and recommend reading materials in all formats. Librarians have acknowledged that partnering
with the library users in collection development leads to relevant and appropriate materials resulting in improved circulation and usage. This is the essence of the just-in-time collection development approach. Apart from enhancing the relevance of library materials, this approach also reduces costs arising from providing materials that are hardly used. This cost saving is important given the resource constraints that most research and academic libraries currently face. It is unfortunate that some librarians are resistant to using user-driven collection development as an adjunct to the traditional forms of collection development. This resistance is attributed to the notion held by some librarians that collection development has always been the purview and the exclusive responsibility of the librarian. Some library users are imagining a librarian-free collection development future but this seems untenable, at least in the short term, since librarians use specialised skills and experience to ensure balance in library collections. Most users may not have these specialised skills and experience; and the other virtue of the librarian’s relatively impartial overview is that as the emphasis in collection development ought to be that of balance: total reliance on user demand – as distinct from community need – could lead to unbalanced collections and collections built around personal interest and transient enthusiasms.

Research and academic library users also need competency in collecting, annotating and citing published works. They need to understand reference management tools, processes and styles. Library 3.0 users may also find proficiency in the use of any reference management software useful when writing research papers. Common reference management applications include EndNote, Mendeley, CiteULike, Zotero, refbase, Biblioscape, RefMan, RefWorks, SciRef, Papers and Bookends.

The users of research and academic libraries, especially the students, should also possess reading literacy. This means they can read, understand, use or reflect on text and non-text material so as to enhance their knowledge and participation in society. Reading literacy encompasses reading for personal interest, work, education and public use. Competent readers are not only able to read accurately but are also proficient in retrieving, evaluating and applying meanings. They are also able to integrate the new information they obtain through reading with what they already know and situate it in their context. Similarly, competent readers are able to compare and contrast different sets of literature as a way of integrating the new information in the existing pool of knowledge. Importantly, competent readers are able to evaluate the accuracy or reasonableness of claims made in sources. This competency is important for library users in 3.0 environments, where they also operate as apomediaries supporting their peers.

4.2.4 Organisational competency

Research and academic library users should have an understanding of their parent institutions and the role libraries play in helping meet their vision and mission. They should understand the unique characteristics – organisational culture – of the organisations, as well as the contexts in which they operate. Library users should also be aware of organisational challenges, politics and strengths. They should strive to contribute to the institutions’ efforts to mobilise the material and moral resources needed by the
libraries to play their roles in the community. Library users can also contribute to organisational development and sustainability by participating in strategic planning, visioning, decision making and resource mobilisation.

The users should also understand their libraries. They should understand and comply with library standards, procedures, policies, cooperation frameworks, opening and closing schedules, rules and regulations, terms and conditions of service, membership obligations and privileges, and organisational structure. They should be familiar with the physical or virtual spaces of libraries and make the best use of them. They should also strive to use these facilities in ways that support usage of the library by others. This use is enhanced through cultural competencies which improve the adaptability of users and create a cohesive environment in the library. Users should also understand the corporate culture of the institution. This understanding will enable the users to create a comfortable, free and culturally-diverse environment which is not only productive but also fun to work in. Civility, courtesy and support to persons with disability are all components of cultural competency.

4.2.5 Terminological competency

Research and academic library users should have a good understanding of the key terminology used by their libraries. Specific terminologies are used to articulate information needs as well as search, retrieve, and present information. Consequently, an incorrect use of terminologies may lead to a misunderstanding and irrelevant information. Kupersmith (2012) conducted a usability study of fifty-one library websites and found that the average success rate for retrieving journal articles or database articles from websites was 52%. He argued that one of the determining factors of the success rate was the terminology used. He proposed the use of natural language and the provision of additional text to explain difficult terms in order to enhance the usability of library collections and services. He emphasised that libraries should use terms which their users can understand well enough to make the right and most productive choices.

Terminology on signage should not necessarily be conventional but should make sense to the users, who can easily be put off by technically accurate but confusing terminology. The basic principle here is that librarians should select terminology not because it is meaningful to them (librarian-friendly) but because it is user-friendly. Consistent use of terminology in specific library environments would also enhance meaningfulness and avoidance of ambiguity. Research and academic libraries which participate in collaborative consortia may also have to standardise their terminology and acronyms so as not to confuse their users.

Librarians should educate library users about key terminology. They should also compile a glossary of terminologies and acronyms for their users. Nonetheless, it is incumbent on the users to make deliberate efforts to learn and apply the terminologies used by their own library. Given the multiple profiles research and academic library users are likely to hold simultaneously, they may also have to master the meanings of the terminology in different settings. This need may be more pressing in multilingual situations.
4.2.6 Technological competency

Diverse technologies have been used in research and academic libraries to support the creation, organisation, dissemination and preservation of information over the years. The use of appropriate technologies has made a substantial contribution to helping libraries to meet the information needs of their users. Currently, ICTs have a major impact on how research and academic library users seek and apply information. Indeed many studies have reported that research and academic library users are enthusiastic about technology and its perceived benefits in providing near-instant access to information (Ramos, 2007; Ayre, 2008; CIBER, 2008; Rainie, 2009). The use of ICTs has also enabled library users to create new, or to remix existing, content which they share with their ‘followers’ in countless technology-mediated platforms. Technology has also facilitated the personalisation of, and unlimited access to, library services. The benefits of technology in facilitating unrivalled access to library services and products, and enhancing their use, are founded on its potential to provide a multiplicity of approaches to information searching, retrieval and use and thus fit the library more closely to the lifestyles of the users. Many research and academic libraries worldwide have appreciated this potential and are already implementing diverse technology projects. Consequently, library users need ICT competency to maximise the benefits of these technologies.

Some of the technology skills research and academic library users would require in a 3.0 environment include a basic knowledge of how to use computers, other digital devices and common office equipment; proficiency in the use of the Internet, intranets, websites, e-rooms, online databases and search engines; as well as a basic understanding of the prevailing ICT security challenges and solutions such as firewalls, antivirus packages and spam-management utilities. Other ICT competencies library users may require include installation and configuration of basic library ICT hardware and software; web publishing, evaluation of the suitability of web content and other digital resources; teleconferencing and the use of basic communication applications such as social media, chatrooms, mailing lists and electronic mailing lists; citizen journalism; an awareness of electronic communications etiquette (‘netiquette’), ethics and ICT policies; content filtering; information handling using ICT tools; image capture, editing, optimisation and sharing; multimedia production skills; basic computer applications for word processing, spreadsheets and database management; as well as a competence in the use of digital catalogues and other library information systems.

4.2.7 Social competency

This is competency in social, emotional, intellectual and behavioural skills, which research and academic library users need in order to adapt successfully in their communities. Social competency is exemplified by library users’ ability to establish, sustain and develop beneficial relationships with other people in their professional, personal and community circles. Adetoro (2011) argues that information seeking and use are social activities, the success of which requires effective social and relationship skills such as emotional and behavioural regulation, peer-relation skills, effective
communication, self-assertion abilities, social problem-solving and conflict-resolution skills. Wentzel (1991) asserts that there is a strong association between social competency and academic performance. He argues that socially competent students are likely to get better grades in their academic work than their other counterparts. Similarly, socially competent persons generally live more productive and happier lives than those who are not.

Social competency is likely to be critical in 3.0 environments, where apomediation and social networking play major roles in information seeking, validation and use. Socially competent researchers, students and scholars are likely to be better users of Library 3.0 services and products. Therefore, research and academic libraries should devote substantial resources to promote and develop the social competencies of their users, not just to make them better users of library services, but also to contribute to their personal development and preparedness for life’s challenges. Socially competent library users can also support the establishment of relationships which can generate material and other benefits for the libraries and their parent institutions.

Some of the social-competency skills which research and academic library users may require in Library 3.0 scenarios include relationship skills for developing and sustaining partnerships; social interaction; social sharing; teamwork; effective communication; advocacy, networking and alliance building; negotiation; debating; tact; empathy; personal skills such as self-motivation, confidence, risk taking and independence; as well as learning skills exemplified by adventure, mental agility, experimentation and innovation.

4.2.8 Legal competency

Research and academic library users need legal competency to avoid infringements of intellectual property rights and potential conflict with the owners of such rights. They should have a good understanding of copyright, freedom of access to information and other intellectual property rights. Library users should also be aware of the emerging concept of a library ‘bill of rights’ that would require them to use the library in ways that do not hinder or inconvenience other library users. They can do this by not discriminating against any library users based on their profile as well as by upholding ethical and equitable use of library resources. Thus, they will not, for instance, hide information resources, change the configuration of library computers unnecessarily, or reserve library spaces using personal belongings.

The library users should also understand the legal issues relating to the privacy of the other users and institutions. This competency is critical in a networked and socially permeable 3.0 environment. Research and academic library users should not participate in any acts of hacking or intrusion which would violate the privacy of others. Similarly, library users who are legally competent know what to share and what to keep private. This way, they avoid having their privacy violated.

Research and academic library users should also be aware of general legal issues in the larger society around them, as well as those arising from the need to protect the welfare of a campus community. This knowledge would help them to avoid acts which may lead to criminal or civil litigation. A library user facing any form of litigation
may not be in the right state of mind to use the library effectively. The libraries should provide documented copies of laws, policies and regulations to all library users, either physically or digitally, to ensure their availability whenever they are needed.

4.2.9 Knowledge management competency

Peers in apomediated information systems play a major role in knowledge generation and sharing. Therefore, Library 3.0 users need basic skills in knowledge management. One of the key competency areas which the users require is publishing. The users should be able to document, organise and share their ideas or research findings as widely as possible. They should be proficient in self-archiving, use of institutional repositories, open-access publishing and general scholarly communication, as well as citation and reference-management processes, tools and techniques. Besides these, the possession of basic editing, document-layout and publications-dissemination competencies would also enable research and academic library users to manage and share their knowledge effectively.

Research and academic library users, as peer educators, are also expected to support the capacity development initiatives in their institutions. They would require coaching, training and mentorship skills to perform this role effectively. They should also be able to participate in knowledge management platforms such as learning forums, working groups, seminars, workshops and advisory group meetings or ‘brown bag’ lunches to share their own knowledge and to benefit from the knowledge of others. They should have an understanding of knowledge perpetuation and be able to mitigate the risk of knowledge loss by devising and executing disaster preparedness and recovery systems as individuals as well as within their libraries and parent institutions.

4.2.10 Research competency

One of the key functions of research and academic libraries is to support research. Researchers, students and scholars conduct or participate in diverse research projects both individually and as groups. Therefore, research competency is one of the core skills that research and academic library users require. Generally, they should be able to analyse and formulate research issues and break them down into searchable key words and phrases; identify the information necessary to answer the research questions; select the information tools and resources to use to search for the information; locate and access the information resources; conduct an information search by studying the information resource; evaluate the suitability of information accessed in answering the research questions; interpret the research findings; apply the suitable information and discard what is not useful; store the useful information; and provide a record of the research methodology, findings and references used.

Besides having scientific research skills, library users should also be open-minded, adaptable and creative. They should also be able to conduct research as individuals or in multidisciplinary teams. They should also have a basic understanding of research project-management approaches. An understanding of the ethical and environmental implications of their research projects would also be valuable.
Good research competency will enable library users to meet their information needs using the available resources cost-effectively. This competency also helps the users to ascertain the veracity, bias, timeliness, reliability and context of the information resources available before selecting the ones to use. This enhances the validity and applicability of research findings. Research and academic libraries should include research as one of the topics covered in user-education or information-literacy programmes. The integration of research in user-education programmes should be carried out in consultation with the relevant academic staff to enhance appropriateness and avoid duplication of efforts. Table 4.2 presents the proposed competency index of Library 3.0 users.

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
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</table>
| Technical     | Information needs analysis     | Researchers, scholars and students should be able to:  
1. recognise their own information needs;  
2. determine the nature of the information needed;  
3. access the needed information effectively and efficiently;  
4. evaluate the information and its source critically;  
5. incorporate selected information into the existing knowledge base;  
6. use information effectively to satisfy need. |
|               | Information searching          | Researchers, scholars and students are able to:  
1. use the common online and offline bibliographic tools;  
2. break down information needs into searchable units;  
3. translate the searchable units into key words;  
4. conduct effective searches using appropriate bibliographic tools such as online databases, catalogues, indexes and bibliographies, among others;  
5. retrieve relevant and adequate information. |
|               | Information resources          | Researchers, scholars and students are able to:  
1. understand the common information resource forms and formats;  
2. select and recommend appropriate and relevant information resources;  
3. understand the location and access methods of information resources;  
4. collect, annotate and cite published works;  
5. read, understand, use or reflect on text and non-text material;  
6. evaluate the accuracy and reasonableness of claims made in information sources. |
### Table 4.2 Competency index of Library 3.0 users (cont.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
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<tbody>
<tr>
<td><strong>Terminology</strong></td>
<td>Researchers, scholars and students are able to: 1. understand and correctly apply the terminology used by their library; 2. understand the common acronyms and abbreviations used in their library; 3. contribute to the development of appropriate terminology for the library.</td>
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<tr>
<td><strong>Organisational</strong></td>
<td>General</td>
<td>Researchers, scholars and students are able to: 1. understand and support the realisation of the vision and mission of the parent institution; 2. understand, influence and operate effectively within the organisational culture of the parent institution; 3. manoeuvre organisational politics; 4. participate in organisational development processes such as strategic planning, visioning, decision making and resource mobilisation; 5. see the ‘big picture’ of the parent institution.</td>
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<tr>
<td><strong>Social</strong></td>
<td>Relationships</td>
<td>Researchers, scholars and students are able to: 1. establish, sustain and develop beneficial relationships in and around the library; 2. interact effectively with the librarians and other library users to enhance the library experience; 3. share information, information resources and experiences socially; 4. communicate effectively; 5. espouse and encourage teamwork; 6. build beneficial networks and alliances; 7. negotiate and advocate effectively for issues of interest; 8. act tactfully; 9. empathise with librarians and other library users.</td>
</tr>
<tr>
<td><strong>Personal skills</strong></td>
<td></td>
<td>Researchers, scholars and students should be: 1. self-motivated; 2. confident; 3. risk-taking; 4. independent.</td>
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<tr>
<td><strong>Learning skills</strong></td>
<td></td>
<td>Researchers, scholars and students should be: 1. adventurous; 2. mentally agile; 3. curious and inquisitive; 4. innovative.</td>
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### Table 4.2 Competency index of Library 3.0 users (cont.)

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<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
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<tbody>
<tr>
<td>Legal</td>
<td>Intellectual property rights</td>
<td>Researchers, scholars and students should:</td>
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<td></td>
<td></td>
<td>1. understand the legal issues surrounding the use of information;</td>
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<td></td>
<td>2. understand and obey copyright, freedom of access to information and other intellectual property rights.</td>
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<td></td>
<td>Library bill of rights</td>
<td>Researchers, scholars and students should:</td>
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<td></td>
<td>1. use the library in ways that do not hinder or inconvenience other library users;</td>
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<td></td>
<td>2. respect the privacy of other library users and librarians;</td>
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<td></td>
<td>3. competently judge personal information suitable to share or to keep private.</td>
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<td>Societal legal provisions</td>
<td>Researchers, scholars and students should be:</td>
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<td></td>
<td>1. aware of the general legal issues and provisions in the society in which they live or work;</td>
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<td>2. sensitive to acts which can lead to criminal or civil litigation, and committed to avoiding them.</td>
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<td>Technology</td>
<td>Devices and equipment</td>
<td>Researchers, scholars and students are able to:</td>
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<td></td>
<td>1. correctly and appropriately use basic technological tools and equipment, such as digital catalogues and other library information systems, in the library;</td>
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<td>2. install, configure and troubleshoot basic library hardware and software;</td>
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<td>3. appraise and select the equipment which best meets their information needs.</td>
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<td></td>
<td>Computer applications</td>
<td>Researchers, scholars and students are able to:</td>
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<tr>
<td></td>
<td></td>
<td>1. install, configure and use basic computer applications such as word processors, spreadsheets and database management packages;</td>
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<td>2. design, create and use PowerPoint presentations;</td>
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<td>3. set up and proficiently use communication software such as Skype, chatrooms, mailing lists and document-sharing utilities.</td>
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<td></td>
<td>Document management</td>
<td>Researchers, scholars and students are able to:</td>
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<td></td>
<td>1. scan or otherwise digitise documents using common technological tools and techniques;</td>
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<td>2. undertake basic graphics tasks such as editing, optimisation and customisation of still images;</td>
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<td>3. use information capture tools such as bar-code readers and specialised scanners;</td>
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<td>4. undertake basic desktop publishing tasks such editing and publications layout.</td>
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<tr>
<td>Area</td>
<td>Competency</td>
<td>Skills</td>
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<tr>
<td><strong>Multimedia production</strong></td>
<td>The researchers, scholars and students are able to:</td>
<td>1. capture, edit or optimise basic audio and video files; 2. organise, store, tag and share multimedia files.</td>
</tr>
<tr>
<td><strong>Internet and related technologies</strong></td>
<td>The researchers, scholars and students are able to:</td>
<td>1. use the Internet, intranets, e-rooms and other online information facilities; 2. publish material on the World Wide Web; 3. use social networking media effectively for information seeking and sharing; 4. evaluate the suitability of online content.</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>The researchers, scholars or students:</td>
<td>1. understand the major security risks, concerns and challenges associated with the use of technology; 2. can install, configure and regularly update anti-virus software; 3. make the best use of Internet security tools such as firewalls and anti-spam utilities.</td>
</tr>
<tr>
<td><strong>Ethics</strong></td>
<td>The researchers, scholars or students should be able to:</td>
<td>1. understand and conform to ICT policies in the library and parent institution; 2. understand and comply with electronic communication etiquette; 3. set up content-filtering solutions in their devices.</td>
</tr>
<tr>
<td><strong>Knowledge management</strong></td>
<td>Documentation and dissemination</td>
<td>The researchers, scholars or students should be able to: 1. document and organise their knowledge or ideas; 2. share research ideas and findings effectively; 3. use self-archiving solutions and institutional repositories; 4. publish on open-access platforms.</td>
</tr>
<tr>
<td><strong>Capacity building</strong></td>
<td>The researchers, scholars or students, as peer educators, should be able to:</td>
<td>1. coach, train or mentor contemporaries and other library users; 2. organise, facilitate or generally participate in learning forums, seminars and workshops; 3. participate productively in technical working groups and advisory committees.</td>
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</tbody>
</table>

Table 4.2 Competency index of Library 3.0 users (cont.)
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<table>
<thead>
<tr>
<th>Area</th>
<th>Competency</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge perpetuation</td>
<td>The researchers, scholars or students should be able to: 1. translate their tacit knowledge to explicit knowledge through codification and other means; 2. anticipate and mitigate the risks of knowledge loss; 3. preserve knowledge and knowledge materials in the most usable format.</td>
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<tr>
<td>Research</td>
<td>Literature search</td>
<td>The researchers, scholars or students should be able to: 1. analyse, formulate and break down research issues into researchable units; 2. identify information necessary to answer research questions; 3. select and locate suitable information sources to search for information; 4. search for the information needed by studying the sources; 5. evaluate the suitability of information accessed; 6. use the suitable information while discarding what is not useful.</td>
</tr>
<tr>
<td>Research methods</td>
<td>The researchers, scholars or students should be able to: 1. design research projects at varying levels of sophistication; 2. undertake research projects at their respective levels; 3. interpret the findings of the research projects; 4. store useful information emanating from the research findings; 5. provide a record of the research methodology applied; 6. provide citations and a list of the references used.</td>
<td></td>
</tr>
<tr>
<td>Research personality</td>
<td>The researchers, scholars or students should have the following personality traits which can enhance their research potential: 1. open-mindedness; 2. adaptability; 3. creativity; 4. independence of thought; 5. keenness; 6. team spirit.</td>
<td></td>
</tr>
<tr>
<td>Research management</td>
<td>The researchers, scholars or students should be able to: 1. manage research projects at all levels; 2. apply or enforce ethical considerations during research; 3. consider and manage the environmental impacts of research projects.</td>
<td></td>
</tr>
</tbody>
</table>
4.3 Apomediation in the Library 3.0 context

The core function of research and academic libraries has been to provide relevant information to researchers, scholars and students in a timely and cost-effective manner. Research and academic librarians have devised and deployed diverse strategies and tools to accomplish this. As mentioned earlier, research and academic librarians in the past worked mainly as intermediaries, bridging the gap between information and the users. The emergence of self-service approaches and disintermediation led some people to believe that information had finally been set free from libraries and librarians, and to imagine a future without libraries or librarians. They imagined that they would get all the information they needed freely from the Internet and other online sources. They reasoned that where no appropriate information was available on the Internet, they would produce it with their peers or followers in social networks. In fact, some libraries have been closed down and the librarians reassigned, while others have been reorganised.

One of the affected institutions is Harvard University, which in January 2012 initiated a plan to reorganise its libraries. Although there was anxiety when the plan was announced, with the librarians fearing that they had been effectively laid off, because they had been asked to reapply for all the new or restructured positions, the administrators explained that the plan was merely to reorganise the libraries, and the requirement affected only the technical librarians involved in the cataloguing and collection development (Worland, 2012). Menz (2012) explained in June 2012 that the Harvard Library System would not be significantly reducing its staff. An emailed announcement from the Library Executive Director and the Senior Associate Provost for the Harvard Library explained that due to a voluntary early-retirement incentive program and ‘careful management of vacancies’, nearly all library staff members with roles designated as Harvard Library Shared Services or Support Services would have a position in the new library organisation. Despite the relatively positive outcome of the process, many librarians, given the lofty status of Harvard, interpreted the case to be a harbinger of impending mass layoffs by research and academic libraries worldwide. Such reports confirm the view that libraries and librarians are currently facing challenges to the perception of their continuing relevance, which they need to retain the confidence of their sponsors and users.

Such reports confirm the view that libraries and librarians are currently facing challenges to the perception of their continuing relevance; they need to retain the confidence of their sponsors and users. Apomediation is one way of mainstreaming libraries and librarians in the emerging infosphere. Through apomediation, librarians are inviting library stakeholders, especially the users, to a seamless collaborative partnership to address the challenges currently limiting the full realisation of the library dream, as exemplified by Ranganathan’s ‘Five laws of library science, (Ranganathan, 1931), and thus ensuring that every ‘book’ is used by its ‘reader’ cost-effectively. Apomediation ensures that librarians do not stand aloof as library users helplessly bear the needless burden of information overload. Apomediation offers a window for librarians to demonstrate that as more information
becomes available, more librarians are needed to help the information users to identify and access what is relevant from the vast reservoir of options. As ICTs become more ubiquitous, the help of librarians in supporting library users to utilise technological tools for effective information searching and retrieval becomes more apparent.

One of the most important parties in an apomediation process is the apomediary. Apomediaries in Library 3.0 settings can be people, agents or technological tools that voluntarily offer optional guidance and intervention aimed at enriching the information experience of the users. Peers, such as fellow students, researchers or lecturers, can be apomediaries. Similarly, experts, such as librarians, rated researchers, authors or scientists can also act as apomediaries in 3.0 libraries. While experts draw from their many years of technical training and field experience, peers may have developed an ‘expertise’ which is not formally accredited but is nevertheless useful. As mentioned earlier, apomediaries earn credibility over time, based on the quality of the services they offer as well as their perceived authority in the subject. This apomediary credibility, in some cases, can be more important than information source credibility. Thus, if library users encounter conflicting information, they would easily believe what apomediaries provide as more credible than any other information source. This situation implies that apomediaries are as important as, if not more important than, other conventional information sources in a Library 3.0 environment.

In Library 3.0 settings, there is an abundance of information. This abundance is caused by the increased ability of individuals or groups to create and share information fast. The abundance is also a result of improved information preservation technologies. One of the greatest challenges in an ‘abundance of information’ scenario is how to identify information which is relevant to an individual’s needs. Apomediation facilitates the sifting of information to identify the useful from the valueless in specific contexts. The apomediaries collaboratively filter content at the point of use. This mode of content filtering has been described as ‘downstream filtering’ and uses bottom-up content quality-assurance mechanisms (Eysenbach, 2007). The apomediaries use a combination of tools and resources to guide users to the most relevant information and away from less valuable, but abundant, alternatives. To enhance the accuracy of facts, the opinions of apomediaries are validated by other apomediaries through further content filtering and practice. Thus information shared in an apomediated environment tends to be original, personalised and easy to use.

Social networking and decentralisation in apomediated libraries remove the barriers to information flow by reducing bureaucratic hurdles, and monopoly and control of information and information resources. Apomediaries encourage open collaboration in which participants all see what each person or agent is doing. This approach facilitates transparency and rapid dissemination of information. Openness in apomediation also helps library users to seek and receive help at the point of need. As particular apomediaries offer help, other apomediaries are able to validate or add more value to it, thus enriching the information experience of the hitherto stranded information seeker.
Apomediaries and other information users in an apomediated Library 3.0 environment feel the obligation to stay connected and help each other. This is largely achieved through what Reichelt (2007) describes as ‘ambient intimacy’. This is being virtually in touch and connected with people through social networking media with a high level of regularity which is not possible physically owing to the constraints of time and space. People feel closer even though they do not and may never meet physically. Their intimacy grows as they constantly share what is happening in their lives and what they are doing through phatic communion or the art of small talk (Coupland, Coupland and Robinson, 1992). Phatic communion using social media, such as Twitter, is simple, fast, borderless and cost-effective (Reichelt, 2007). It is also important to note that phatic communion enables information seekers to raise the alarm or send out an ‘SOS’ when they are in urgent need of help. Apomediaries on standby are able to pick up and respond to the call and provide help fast. This level of connectedness, intimacy and brotherhood is difficult to achieve with conventional modes of intermediation or disintermediation.

Parties in an apomediated environment play different roles at different times. At one point they may be apomediaries while at another they are intermediaries and other times disintermediated. Sometimes the parties may experience or desire a combination of all approaches. This flexibility enables information seekers to select apomediaries to their benefit. It also enables apomediaries to play the role which is appropriate in the context of the information user at the time of need. Each information user and situation is unique and requires an individually tailored response. Thus, there are no predetermined tools or steps for responding to emerging information-user needs, as each case is dealt with in its own way. This approach enhances the appropriateness of the support by each apomediary and thus increases the possibility of satisfying the information needs of library users.

Apomediation in Library 3.0 settings is, above all, a learning experience for all the participants. In apomediation, learning occurs through practice, participation, information production (prosumption) and open peer review. The experience of each participant is normally first-hand or second-hand, that is, personal or peer experience. To participate effectively in apomediation, information users and apomediaries need to be empowered and mature enough to contribute and to engage with the other players. It is also critical that the information seekers are able to make individual contributions by providing additional information sources and bringing different perspectives to issues.

Valuable as it may seem, the full realisation of apomediation in research and academic libraries is hindered by diverse challenges. One of the greatest of these is the likelihood that apomediaries will promote opinions over facts as a consequence of the potential ‘echo’ effect. This risk has led many librarians to emphasise that the correct interpretation and application of information may still require the intervention of experts: typical examples occur in legal and medical matters. The other likely major challenge relates to implementation of apomediation. For research and academic libraries which have operated as bureaucratic systems for many years, the power shifts envisioned by apomediation may not be easy to implement.
4.4 Research and academic librarians as apomediaries

Given the general high aptitude of research and academic library users and the likelihood of their participating effectively in apomediated settings, librarians working in these institutions have an opportunity to serve as apomediaries. To perform the role of an apomediary effectively, a research or academic librarian needs to be trusted by users as credible. They also need the relevant subject expertise or specialisation, an amiable personality, open-mindedness, effective communication skills, a passionate interest in the subject, a sense of adventure and a capacity for innovation. Librarians who would work effectively as apomediaries also need to be patient, innovative, dependable, approachable, pragmatic and dynamic. They should be perceived as influential, inspirational and informed (staying ahead of the users). Some of the ways through which research and academic librarians can act as apomediaries are discussed hereunder.

4.4.1 Conducting reviews

One of the important ways in which research and academic librarians can act as apomediaries is by reviewing information resources. The depth and structure of the reviews can vary depending on the specific information resource and the intended audience. Objective reviews highlight the major advantages and disadvantages of particular information resources. Library users reading the reviews are then able to decide whether to consult the resource or not. The users can also provide their comments or complete reviews of the information resources. Similarly, the users who choose to consult the reviewed information resource can provide feedback which can be used to validate the reviews. Reviews can be written or oral and can cover the substance of the content of the information resource or the experience of using it.

Research and academic librarians may also collect and disseminate reviews written by other librarians or subject experts. Similarly, the librarians can write reviews in response to reviews by other librarians and subject experts, and can contribute reviews to e-commerce websites such as Amazon.com or eBay. They can also publish reviews on specialised blogs and web sites or circulate them through email or electronic mailing lists. Writing reviews has the potential to elevate the status of librarians and demonstrate their intellectual capacity. This evidence is critical in research and academic institutions where librarians seek researcher or academic status.

Reviews help to point library users to the credible and most useful information resources and facilitate their speedy filtering of the available information. Reviews also expose the unique features of information resources which library users, pressed for time, may not identify easily. Sometimes reviewers summarise the content of publications, which enhances their usability. Reviewers also provide opinions, which can steer discussions of the issues covered in the publication beyond the original authors’ thoughts. Reviewers may also compare publications with other similar ones, thus highlighting trends, similarities and differences which potential users of the publications may find useful. Some reviews are also critical and point out errors of fact, reason or perspectives in publications. Reviews may also be an evaluation of
the style, originality, clarity, coherence or conciseness of the material. Therefore, re-
views save library users’ time and enhance their ability to identify and apply relevant 
information.

4.4.2 Content rating and recommendation

Research and academic librarians, as apomediaries, can also rate or recommend infor-
mation resources. The librarians can ‘star-rate’ information resources, using e-commerce 
sites and other web utilities. They can also develop recommendation systems, through 
which they can suggest information resources based on a user’s borrowing history or 
that of their contemporaries. The recommendation system can be modelled as ‘those 
who read this information resource also read ...’ and suggest to library users potential 
information resources when they are borrowing, accessing or returning information re-
sources. The recommendation system may furthermore be integrated with the library 
catalogues, so that users can find suggestions of information resources as they search 
the catalogues.

The librarians can also identify and promote the use of web-based informa-
tion-resource recommendation facilities. Currently, these could include ‘What 
Should I Read Next’ or ‘Reader2’, which recommend book titles to users based 
on what they have been reading. Librarians can also introduce users to sites such 
as ‘Goodreads’, which recommend information resources based on what the read-
ers or their friends have enjoyed reading. Other common recommendation sites 
include Shelfari, LibraryThing, Books 2 Do Next, weRead and tvtag. These rec-
ommendations can be integrated and circulated through social bookmarking sites 
and networks, tagging or syndication. The librarians can also suggest information 
resources by developing recommended reading lists, information-resource guides 
and personal bibliographies.

4.4.3 Content validation

Research and academic librarians can also help library users to validate information 
they access. This is especially important for information gleaned from the web and 
other electronic sources. The ease of publication in this information-rich generation 
implies that it is difficult to determine the authenticity of any content available to re-
search and academic library users. The situation has been exacerbated by the ease with 
which users mix, remix and share information with diverse intentions. Content valida-
tion, just as information generation and sharing, must now be given due consideration 
in the modern research and academic infosphere as more and more researchers, stu-
dents, and scholars turn to the Internet, ostensibly for ready information. Librarians, 
working as apomediaries, can play a pivotal role in validating and verifying the infor-
mation which users obtain from diverse sources.

Subject or specialised librarians can cross-check sources and confirm whether the 
information a user has accessed is valid or not. They can rely on advanced information 
searching and retrieval systems to ascertain the veracity of information sources and 
content. They can also use human contacts, to whom library users may not necessarily
have access, to verify the accuracy, currency, authoritativeness, objectivity and appropriateness of information. Another way research and academic librarian apomediaries can help users to access credible information is by empowering them to evaluate information sources effectively. The librarians can develop check-lists and other content-evaluation criteria which the users can apply when judging the validity of online content. They can do all this on request or proactively.

Research and academic librarians, as apomediaries, can also use their expertise and experience to appraise the comprehensiveness or completeness of information in meeting the general and specific needs of the library users. The librarians can also assess the usefulness of content by checking the authors’ qualifications and credentials vis-à-vis the subject coverage. They can also use any perceivable affirmation of the content by renowned experts in the subject area as indicators of validity.

Librarians can also enhance content validity by subscribing to, and promoting the use of, credible information resources. This promotion of sources does not have to be based solely on the expert views of librarians, but also on the contribution of the users through ratings and recommendations, as discussed earlier. Most of these recommended information resources are published by renowned experts in the subject or research areas. The librarians may also rely on intelligent library systems to determine the resources most useful or preferred by the library users, confirm their veracity, and promote their use.

4.4.4 Content customisation

Information accessible from the infosphere is diverse in terms of type, format and language, largely because of the broadcast communication approach which assumes some homogeneity in the attributes and needs of information users. The reality, however, is that different information users have different interests and needs defined by several factors such as domicile, occupation, age or hobby. Berleant and Berghel (1994) point out that the rising flood of information demands efficient handling in terms of presenting information in the form best suited for users’ needs at the point of consumption. Therefore, information users often have to transform information obtained from various sources into forms which best suit their needs. This is customisation. Research and academic librarians working as apomediaries can support the users by customising information according to their needs and interests. To do this effectively, the librarians must seek to know their users well enough to be able to customise library services and products for them.

Research and academic librarians can customise content through summaries, abstracts, editing, annotation, collation and provision of related web links, version control, individualised user interfaces and shortcuts, integrated Internet gateways, keyword analysis, information visualisation and contextualised support. The librarians can also customise research or academic content by repackaging. This can be done by adding value to the intellectual and physical attributes of information through reformatting, digitisation, simplification, illustration, remixing, aggregation, analysis and synthesis. Repackaging makes information easily readable, understandable and usable, thus improving the effectiveness of library usage.
4.4.5 **Information counselling**

Given the need of information users in apomediated environments to contribute to services and products, research and academic librarians should support library users in participating constructively in creating mutually beneficial information ecosystems in their institution and community. This can be done through information counselling. The concept of information counselling goes beyond information literacy and reflects an empathetic and practical advisory and support orientation. Information counselling also builds the confidence of library users through reassurance. It focuses on helping users to develop behaviours which are compliant with the emerging unpredictable information characterisation. Critically, information counselling takes cognisance of feelings, values, purposes and motivations of users in defining information seeking and use. Information counsellors help users to learn behaviours that support the effective use of information while unlearning those that hinder it (Nahl, 1995). Information counselling is also individualised; it relies on and promotes self-assessment and therefore has the potential of being perceived as less intrusive or prescriptive (Maura, 1993). Effective information counselling enables library users to relate closely to librarians, whom they can treat as confidants or friends. This perception is essential for new university students or novice researchers.

Effective information counselling enables users to understand how to search, access, evaluate, use and share information successfully using a combination of tools and techniques. It also helps users to develop positive skills and attitudes which are useful in documenting and sharing information through multimedia and hypermedia, which are currently most commonly used for information packaging and transfer.

Information counselling is not ordinarily targeted at information end users only but includes all categories of players in the information ecosystem. For instance, lecturers, as important co-apomediaries or peer counsellors, are helped to develop the skills they need to support the people under their influence to make the best use of apomediated information systems. They are also counselled to develop their own positive information-seeking behaviours and attitudes, which other users can emulate.

4.4.6 **Knowledge discovery and data mining**

Research and academic librarians can also help researchers and scholars to sift through the vast quantities of information in cyberspace to discover hidden, but useful, information as well as reveal trends, patterns and relationships. This task can be achieved through various techniques and tools of data mining and knowledge discovery, which enable researchers and scholars to convert huge amounts of otherwise less meaningful data into useful knowledge which is essential for their research projects and other academic work. Librarians can also support knowledge discovery through effective metadata management. They can enhance metadata management by developing requisite standards for researchers and scholars to apply to increase the description and accessibility of their own data and of those of interest to them.
Librarians can also support users in performing the actual metadata management roles, since most researchers and scholars are either too busy or lack the skills to do this on their own. It is also imperative that librarians help researchers and scholars to enhance the discoverability of their data through adequate tagging, comprehensive metadata and other techniques.

Another strategy for enhancing the discoverability of knowledge currently trapped in less accessible databases is to connect the existing disparate research and scholarly datasets into a network which researchers, scholars, students, government officers, business people and other interested parties can use to access the knowledge. Research and academic librarians should support the establishment of such networks and shoulder the responsibility of managing them. They should also develop the requisite information architectures, protocols and terms of use of the networks.

Librarians should work to keep the discovered knowledge and information sources visible and usable. They can do this by downloading information from web sources to ensure permanence and preservation of information sources and services. They can also utilise caching systems to store information which is commonly used by the library community, to make it easily available and accessible.

4.4.7 Infodemiology and infoveillance

As mentioned earlier, infodemiology deals with the distribution and determinants of information within a given context (Eysenbach, 2009). Research and academic librarians can be infodemiologists in research and academic institutions. They should understand information distribution patterns and trends in the institutions. They can use this understanding to offer unique and essential information services to researchers, scholars and students. Infodemiology can also be used to map information distribution and use patterns which can reveal bottlenecks in information flow. Infodemiology can also be used by librarians to advise researchers and scholars of how their research products are being perceived or used. Librarians can use infodemiology to develop a view of trends in emerging topics of interest in the relevant areas of research or scholarship. They may also advise scholars which publications need revision or recasting, based on usage trends. Infodemiology may enable the librarians to advise researchers and scholars on any intellectual property violations such as plagiarism, illegal copying and inappropriate derivatives of copyrighted works (Fox, 1996).

Librarians can also use infodemiology indicators and metrics to detect outbreaks of misinformation in their communities. This is what Eysenbach (2009) describes as infoveillance. The concept can be applied by librarians to detect misinformation and correct it to minimise its impact. Librarians can also use infoveillance to identify information gaps which may have caused the misinformation outbreaks. They can therefore work with users and experts to create or collect credible content to bridge this gap. For instance, if infoveillance indicators show that library users seeking information on rainmaking as a means of climate change adaptation have misleading information on traditional rainmaking practices in Africa, librarians can contact climate
change experts and anthropologists to create, collect, verify and share content on the subject. Such content is likely to be original and highly usable.

Figure 4.1 represents apomediation in action between research and academic library users and librarians.

References


Abstract: All libraries must work within the constraints of available resources. No library has unlimited space or funding. Controlling costs is essential. Many libraries outsource processing, selection, and other parts of the lifecycle as a response to these limits. Donations, grants, and other alternative funding sources should be included in budgeting strategies.

Key words: budget, item cost, affiliate program, outsourcing, negotiation, group discount, fundraising,, book sale, interlibrary loan, collection philosophy.

In tough economic times, libraries have to tighten their budgets. A 2009 survey by Library Journal revealed that the biggest challenge to libraries was rising materials prices, followed by escalating energy costs and the increasing demand for services and programs (Oder, 2009, pp.32–3). The survey also revealed that many libraries expected materials budgets to decline. Combined with the increased cost of materials and rising demand for new media, this means that libraries have to do more with less.

There are many factors that affect library collection budgets. Each part of the collection life cycle has an implication for budgeting. The purpose of this chapter is to suggest practical ways that libraries can save money in their budgets without affecting the quality of their collections.
Vendors, deals, donation programs, formats, and collection philosophy all come into play. This chapter assumes a line item budget; our next chapter will introduce the idea of a holistic “program budget.”

Vendors

Previously, it was pointed out that relationships with vendors are important to smooth transactions. Generally, libraries have preferred sellers for collection materials. These are companies that often specialize in libraries and understand library missions and services. They have special replacement programs, return guidelines, and sometimes shipping and handling policies.

One way to maximize a materials budget is to look for affiliate programs. In some cases, connecting to online stores through special web links will result in compensation for the library. The library becomes an affiliate, usually with a special corporate account with the vendor, and simply links to the vendor’s online store through a specific URL. The vendor either applies discounts to the shopper’s bill or gives them a commission for shopping with them. The commission could be in the form of a check paid to the library regularly or a credit to their affiliate account for future shopping. This is a great way for libraries to save money. They are probably shopping with the vendor anyway, and the affiliate account provides them with more money to spend on library materials. It’s free money! This particular strategy impacts the quality of the collection in a positive way because it allows the library to purchase more materials than they could have without the extra money coming in.

Another way to maximize a collection budget is a bit more controversial, and has more potential to affect the quality of
the collection. A fairly new tactic that some libraries have tried is to hand over selection and processing of materials to the vendors. Proponents of this idea say that it saves staff time in areas like reading review journals, compiling orders, and physically processing items, as well as stocking and paying for processing materials. This model “[shifts] the library focus to public service,” according to Barbara Hoffert’s article, “Who’s Selecting Now?” (2007, p.40). Hoffert describes the Phoenix Public Library’s decision to hand over selection of library materials to its vendors. Phoenix staff found that about 80 percent of their collection choices were the results of standing orders and titles that were not reviewed. The majority of what they were buying was from vendor-generated lists and vendor suggestions. Hence, they decided to have the selectors spend their time reviewing the vendors’ lists and analyzing the vendor-selection service. Some vendors do charge a per-item cost or decrease the discount they would normally provide for the value-added service of doing the selecting for the library. The cost savings, then, are primarily in staffing and time. Collection managers are freed up for more work in other areas of collection managing: promoting use, bibliographic instruction, and weeding. The library may also save money on review journal subscriptions that they no longer need.

Outsourcing the processing of library materials is another potential area for cost savings. The library can devote the staff and the space formerly used for processing to another endeavor. They can also re-assign the money formerly spent on processing materials like labels, stickers, cases, and book covers, as well as the equipment used in processing.

A less drastic (and less controversial) method of maximizing collection budgets and staff time can be achieved through standing orders. Libraries can set up standing orders for many types of materials. Vendors receive a set of criteria for
library materials and fill orders automatically based on those conditions. For example, a public library could set up a standing order for a particular series of travel books. Every time a new travel guide is published in that series, the library automatically receives a copy. Most standing orders can be even more specific. The library could specify that every time a travel guide for a specific place is published in that series, they automatically receive a copy. This frees librarians from having to keep up with the new releases. They know they will purchase the title, so they save time and increase efficiency by automating that selection process.

In difficult economic times, negotiating with vendors is crucial. Beth Ashmore and Jill E. Grogg offer advice to libraries on how to effectively negotiate for content, tools, and services in their article, “The Art of the Deal: Negotiation Advice from Library Leaders and Vendors” (2009). They suggest that libraries appoint more seasoned librarians to carry out the negotiations, rather than new librarians who are not as familiar with vendors, library service, and/or negotiating. Negotiation is often viewed as a responsibility that comes with collection management. Library administrators trust each collection manager to the task of negotiating contracts, regardless of their experience level. Ashmore and Grogg say, “Institutions should appoint librarians with the necessary negotiation skills needed to get better contracts, better prices, and improved vendor relationships” (2009, p.20).

This article also advises negotiators to do their research. They need to understand the vendor’s products, know who their customers are, how long they have been in the industry, and who their competition is (Ashmore and Grogg, 2009, p.20). Find out what support and training there is for the product, both from the vendor itself and outside opportunities. For example, perhaps a library consortium offers training
and support on a product to its constituents. Also, research what direction the vendor is headed in the future. Have they committed to keeping up with information trends and technology upgrades? The negotiator should also research the library’s specific needs. Are there policy limitations, specific procedures, or mission objectives that the library needs the vendor to address? Negotiators should draw up a list of deal breakers; that is, “a simple list of must-haves and can-do-withouts” so that it is clear to the vendor and the negotiator what exactly they are looking for (Ashmore and Grogg, 2009, p.21).

Negotiating specifics of contracts and services with vendors saves money. It ensures that the library gets what they need. They are, after all, the paying customer. The quality of the library’s collections may depend on the specifics of a contract. See Appendix B for more on negotiating with vendors.

Another easy way to make the most of a materials budget is to find a group to join for group discounts. Library consortia can sometimes negotiate deals for their members that benefit the whole group. State and national library associations are another group that may be able to negotiate for their members.

**Alternative funding sources**

Many library types can benefit from grant writing. There are a variety of grant types and granting institutions to be considered. Some require very specific projects and reporting, while others are very simple, flexible, one-time gifts. In general, grants can help pad declining materials budgets. Lois Stickell and Lisa Nickel, authors of “Grant Proposals for the Working Librarian: From Idea to Implementation” offer good advice about grant writing. They suggest that
library staff start small by looking locally for smaller grants in order to get the idea of what writing, implementing, and facilitating a grant is like before going after larger sums (2011, p.49). They also point out that you can ask for copies of successful grant applications from the grant agency so that you can see what goes into a successful application (p.49).

Fundraising is another avenue to supplement library budgets. The authors of the article “Sources of Funding for Public Libraries” say, “Most libraries tend to supplement their budgets with book sales and small gifts from individuals, and while these sources are important, a more ambitious fundraising campaign should be undertaken” (Duncan et al., 1998, p.167). The authors suggest twelve steps to a successful fundraising campaign, including clearly stating the need for the funds. For example, a bookmobile’s being old is not a good reason for a library to seek funds to replace it. The real reason is that a sufficient and reliable bookmobile helps the library fulfill its mission to reach out to underserved populations. This fundraising approach goes beyond used book sales, bake sales, and car washes (but may include all of those strategies). Rather, the authors suggest that libraries focus on bigger ideas, like “make arrangements for all donations to go into a fund that is tax-deductible” and “research the giving patterns of local corporations” (p.169).

Many libraries have Friends of the Library groups. These groups support the library through financial contributions and volunteer projects. Many Friends activities can supplement a library’s materials budget. Friends groups often manage used book sales and solicit donations of library materials. When donations come in, library staff and Friends volunteers can go through them for titles the library can use in its collections. Out of print titles, rare editions, and extra copies of popular books and other materials can often be
found within library donations. It is well worth the time and effort to enhance a library collection to go through the public’s generous donations in pursuit of useful items! (See Figure 8.1.)

Often, especially in public libraries, patrons show interest in donating to the library and actually ask how they can help. There is a graceful way of accepting donations and getting what the library truly needs. Any donation is generous, but wouldn’t it be nice to count on a couple of defined donations for things the library knows it needs? Consider programs like “Adopt-A-Magazine” and

![Donations at a public library](Image)

**Figure 8.1** Donations at a public library
“Adopt-An-Author.” Patrons commit to sponsoring a magazine subscription or a certain number of copies of a popular author’s next book. These programs help the library save money, and also allow selectors to rely on donors for specific items. Knowing they can spend less money on lots of copies of current bestsellers lets them commit funds to other things. Patrons are happy because they have quicker access to popular items. Hold lists may be shorter if a donor can be relied on to supplement the budget with defined items. The Friends of the Library could participate in these types of programs too. Perhaps they can commit each year to covering the expenses of a particular standing order or purchasing a more expensive reference item (like a set of encyclopedias).

Book sales were mentioned briefly above, but deserve their own discussion. An article by Cecilia Hogan titled “Library Book Sales: Cleaning House or Cleaning Up?” extols these sales as an especially good way to please both library users and library staff. There are a lot of book lovers out there who will load up on fifty-cent castoffs. Many people enjoy the nostalgia of old books or collect them. Library staff love the opportunity to unload extra copies they no longer need, outdated items they have weeded from the collection, or slightly damaged items that they have replaced with new copies. It’s a win-win situation! At fifty cents or a dollar per book, Hogan says, “small libraries might make a few thousand dollars from a successful book sale” (2008, p.37).

Hogan takes the book sale idea even further. She mentions that the first people through the library doors on sale day are usually book resellers (2008, p.37). They have hand-held devices and are scanning UPC codes and typing titles into Wi-Fi enabled mobile devices. They know how to find the real gems hidden in the piles of dusty used books. They are paying fifty cents for books that may look a little worse for wear, but which they happen to know are worth far more.
This is an area where libraries may be missing out on funding opportunities. If the library has rare books, collectibles, and valuable merchandise, they should be the ones to cash in! Hogan’s article lists some online tools that library book-sale organizers can use to find out the real value of the books they are selling. (See Figures 8.2 and 8.3.)

The final alternate funding source we will mention here is endowment funds. Endowments are investment funds established to support an institution like a library. When someone donates to an endowment fund, the money is invested – sometimes for something specific like library materials, and sometimes to support the work of the library more generally. Usually, these donations are tax deductible for the donors. Libraries must follow the withdrawal, usage,
Making a Collection Count

and investment policies set for their endowment, but could certainly specify ways the money could be put toward enhancing library collections.

**Formats**

The variety of formats collected by all library types can either help or hurt a library’s budget. Each library will have to decide if their objective is to duplicate titles in various formats (which may hurt their collection budget) or if they will focus on widening the title choices by only purchasing titles in one format (which may help the collection budget). There are library databases to supplement magazine and journal collections. There are e-book and audio book collections to supplement print collections. There are music download collections to supplement music CD collections.
Knowing what is available in a variety of formats can help selectors work together to get the most out of a collection budget. Online collections of public domain titles, such as Project Gutenberg and bartleby.com add another option to buying more copies in classic literature and some reference materials.

Sharing

Libraries can also make the most of their collection budgets by cooperating in sharing programs, such as interlibrary loan. Often, library branches send materials back and forth to fulfill one another’s lending needs. Each branch can focus their collections in a specific way so that as a group their collections are broad. This way, no one library has to have everything for everyone. Interlibrary loan programs help every library succeed in filling their patrons’ requests without taxing their budgets with purchases of unique, less popular, and sometimes obscure items.

One example of a successful sharing program is described in David Kohl and Tom Sanville’s article, “More Bang for the Buck: Increasing the Effectiveness of Library Expenditures Through Cooperation” (2006). The authors suggest that there are four areas of library service in which creative use “can improve the cost–benefit ratio of library expenditures: sharing printed books, storing print materials, providing access to the journal literature electronically, and providing access to electronic versions of library special collections, faculty publications, or university projects through a consortial institutional repository” (p.395). Each library in the consortium (in this case, OhioLINK) saves money by having increased access to materials. The increase in access to information is a benefit in itself, but getting the most value
Making a Collection Count

out of each dollar spent was the main goal achieved. The four areas listed above are all great ways to save money, but approaching them from the consortia level lets each member library reap complete benefits without having to invest in the full amount of resources needed.

Collection philosophy

Libraries can define their collection philosophy in their collection management policy. Some libraries work toward a broad collection that covers a wide variety of subjects, but make fewer titles available in any one area. Other libraries focus on a deep collection that covers fewer topics, but provides a more profound assortment of titles on each. A library with a broad collection may be more likely to try out new formats. For example, they might provide audio books on tape, CD, MP3 players, and an e-audio collection. There are a smaller number of titles to choose from in each format, but each format is represented in the collection. A deep collection philosophy is likely to focus on one or two formats and provide more titles in each.

Each philosophy has cost implications. Rolling out new collections and formats has an associated price. Libraries need time to market and develop new collections, so they should not invest in them unless they can commit. Introducing a new collection or a new format, and then not having the money to develop it, just teases library users. Patrons will try out the new items and (hopefully) come back for more. If only a few items are available with no plan to add more, the collection can’t satisfy its users. Collection budgets need to be adjusted for new collections so that they can be properly funded. New collections and formats have processing costs too. New stickers, cases, and other finding and shelving aids
have to be stocked. Especially in a weak economy, a more sober approach to collection management should be taken. Don’t introduce new collections, formats, shelving arrangements, displays, stickers, etc. when money is tight. They won’t get the monetary attention necessary to reach their benchmark as a successful collection.

Try to see the bigger picture, and remember that everything is connected. Consider the impact of the little things in how collections are presented. One seemingly small change can impact any other part of the collection lifecycle. Consider the example of a public library patron who suggested that the library create a separate collection of “Inspirational Fiction.” In order to do this, the library would need to spend time identifying all the titles in the existing fiction collection that fell under this subject. They would need to re-label, re-link, and possibly re-catalog each of these titles with the new subject information. They would need to find or create a shelving area to display them, as well as new signage. They would need to write a collection management policy for this new collection, as well as a collection objective and a benchmark. They would need to set aside funds to support this new, separate collection so that it would continue to grow and update. They would need to train staff about the new collection and assign someone to manage it. The patron just thought that moving some books to a new area would create this new collection, and it is not necessarily a bad suggestion – but it is one that the library has to plan for carefully. Making the most of a collection budget means creating collections and subdivisions within them that the library can support financially.

This philosophy discussion applies to weeding too. Choosing to have a lot of old, irrelevant items on the shelf versus having a few fresh, up-to-date items is a decision every library needs to make. Aside from archives and museums,
most libraries will benefit from current collections, even if that means having fewer titles available. In fact, that extra, empty shelf space indicates to donors that more items are needed. When the shelves are packed with old items, people may think the library has plenty, when in fact they are in need.

The final piece of this budget discussion goes back to library staff communications with their users. Staff need to be careful to not call library services and collections “free.” The vast majority of libraries are funded somehow, and very often through the tax dollars of their users. Staff should point out to their users whenever possible that the library exists because users are the ones that directly fund it. Being able to recite the costs of services and collections is a great way to show stakeholders that staff are mindful, careful, and attentive to how the library budget is spent.
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The role of the information professional in competitive intelligence

Information professionals add value to competitive intelligence

We are convinced that the information professional has an important role to play in the process of competitive intelligence. The main reasons for this is that information professionals are familiar with most of the competitive intelligence phases as they are actually already performing many of the activities needed in their competitive intelligence work. Moreover, as information professionals we are trained in some of the competence needed and we have knowledge of the information resources and other tools which are valuable for the process.

An investigation of five Swedish companies, performed by Ojaranta (2006) as a master’s thesis at the Swedish School of Library and Information Science, illustrates how the involvement (or lack of involvement) of the corporate library in competitive intelligence operations might look. Questions were put both to business intelligence managers and to information professionals. The main contributions from information professionals were, as expected, in the capture and manage phases. This corresponds well with our observations and own experiences. Often information professionals are called upon to perform ad hoc information research as a part of competitive intelligence operations. The information professional can also be asked to carry out analyses, for example network analyses. On very rare occasions the information professional participates in the whole process from start to end. In three out of five cases in Ojaranta’s investigation there was some cooperation between the business intelligence unit and the corporate library and there was a feeling that information professionals could be more involved in the work than they actually were. Two of the business intelligence managers, however, did not see that the corporate library could add value to the process. The reason was that, in their opinion, information professionals lacked the necessary competence. This contrasted to the information professionals’ own opinion: they were convinced that they could make valuable contributions if they were involved in the process.

Although there is no profound tradition of information professionals acting as business intelligence officers or managers we are convinced that taking up this role would widen the field of opportunities for information professionals. Our own experiences as a business intelligence manager and a technology intelligence process owner, as well as experiences from colleagues in similar positions, confirm this.

In organisations much of the intelligence work is carried out in the operational units and in functions for business development, communications, patents, analyses and
plans, etc. The main key to success for the information professional is to work in close cooperation with these and other relevant units of the organisation and to be visible as a value adding partner in the competitive intelligence work.

Another application of competitive intelligence for information professionals is to develop your own business. Competitive intelligence is a basis for all business development, not least the business of information management (Nelke, 2012).

The different roles in competitive intelligence work

There are a number of different roles in competitive intelligence work, as mentioned above. Some of the more common roles are: member of the steering committee, assignment or project owner, project manager, researcher, analyst, editor and producer.

If the commitment is large and extends over a long period of time it is wise to manage it like a project. A steering committee is then often needed to allocate resources, set the framework and see that the project is on the right track and keeps to its budget. The steering committee has the final decision-making power on strategic issues that can pop up along the way. The committee should not, however, be involved in the project’s operational work.

The assignment or project owner is the one who owns the competitive intelligence commitment and who will use the results of the intelligence. The assignment or project owner is the commissioner of the work. The project manager drives the project and he or she is also ultimately responsible for the success of the work.

The researcher does the work to capture and manage the information which is needed, including the selection of qualitative sources. The selection of analysis methods and the actual analyses are done by the analyst. Sometimes an editor is needed, especially if we have a computer-based media monitoring system which ‘automatically’ delivers information to the web. In that case it is valuable to have a person going through the information, weeding out the noise and adding some comments to the news. Finally a producer communicates the results in the form of newsletters, reports, oral presentations, etc.

This may seem like a well populated organisation, but in reality the same person holds more than one role. Furthermore, not all roles are applicable to all competitive intelligence assignments. How many roles that are needed and how many people should be allocated to the work very much depends on the size and nature of the assignment. In small scale-competitive intelligence operations one single person could take on all the roles. On the other hand, the steering committee should or often does consist of people not involved in the actual operations.

The information professional can take on any of these roles. Some of the roles require specialist knowledge in the area of the KITs. If the information professional (or any other taking up this role) does not have this knowledge it is difficult to analyse or comment on the KITs.

In Table 10.1 we summarise the content of the roles and which role the information professional can take on.
The role of the information professional

Information professionals and analysis

The trickiest part of the competitive intelligence process from the information professional’s point of view is the phase where the information is analysed. Most people agree that if a qualitative analysis is to be performed, it requires good knowledge of the subject in question. This knowledge is partly derived from secondary sources, what has been read and learnt, but a great part is also tacit knowledge derived from previous experiences of working in the area and from the formal or informal networks this person belongs to. The information professional may not have this kind of tacit knowledge – unless the analyses are about our own area: information management.

However, it is not very clear what analysing actually means, where it starts and where it stops. There are different opinions about what is and what is not analysing. We argue that analysing has already started when selecting the sources and formulating search strategies in the capture phase as well as filtering and preparing the information in the manage phase. To select sources and to filter and manage information are key elements of the information professional’s tasks. This an information professional does all the time, but often neither the information professional nor the client thinks of it as analysing. Ojaranta’s investigation brings out this phenomenon and she quotes Sara van der Voort’s analyst checklist which points out that the information professional is engaged in quite a few analytic activities in order to:

- determine what information is relevant;
- select the best source/article;

<table>
<thead>
<tr>
<th>Role</th>
<th>Content</th>
<th>Does the information professional take on this role?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member of the steering committee</td>
<td>Sets the framework, follows up, takes strategic decisions</td>
<td>Yes</td>
</tr>
<tr>
<td>Assignment owner/ Project owner</td>
<td>Owns the project, is the commissioner of the work</td>
<td>Yes</td>
</tr>
<tr>
<td>Project manager</td>
<td>Manages and leads the work</td>
<td>Yes</td>
</tr>
<tr>
<td>Researcher</td>
<td>Selects sources, monitors the KITs, captures and filters the information</td>
<td>Yes</td>
</tr>
<tr>
<td>Analyst</td>
<td>Selects analysis methods, analyses the captured information</td>
<td>Yes if there is enough knowledge on the KITs</td>
</tr>
<tr>
<td>Editor</td>
<td>Communicates and publishes the information</td>
<td>Yes if there is enough knowledge on the KITs</td>
</tr>
<tr>
<td>Producer</td>
<td>Produces newsletters, reports, etc.</td>
<td>Yes – but some deliveries require more knowledge on the KITs than others</td>
</tr>
</tbody>
</table>
• highlight critical data;
• review information and highlight salient points in executive summaries.

It was interesting to notice that only two out of the five information professionals in the investigation thought of their contribution in terms of ‘analysing’ although they performed the activities listed in van der Voort’s analyst checklist. The conclusion drawn from the investigation was as follows:

*The bottom line seems to be that most corporate librarians in the study are analysing information but they clearly do not think of it as analyzing. They are daily adding value to information in various ways and helping the decision-maker to take action on the basis of the information. This was clearly seen in the interviews.*

(Ojaranta, 2006: 68)

Ojaranta’s recommendation is that information professionals should promote their contributions as ‘analysed information’.

In order to highlight the qualified work around the processes of creating search strategies as well as evaluating and selecting information sources, information professionals should document these processes. This also serves as a label of quality for the outcome.

The question of information professionals’ contribution or not to analyses and the nature of the contribution is probably very much about definitions and self-confidence.

**Scenarios of the contributions of information professionals**

In the previous section we have seen that the information professional has the ability to take on all the roles in the competitive intelligence process. If, however, enough knowledge of the prioritised KITs is lacking it is difficult to take the roles as analyst, editor and producer. In the following we will elaborate some scenarios for different competitive intelligence projects and the possible role of the information professional versus other units in the organisation. Two of the scenarios are on a general and broad level and the third is a more specific task. All scenarios have occurred in real life, but as to the third the corporate library in this case got involved when the acquisition was already completed and it was discovered that the homework had not been properly done. The corporate library was then called in as a plumber to fix the leaks. Scenario 3 below is about how it could be done right from the beginning.

The selected scenarios are:

1. The management decides to improve its competitive intelligence and gives the information professional a task to conduct a feasibility study (see Table 10.2).
2. The information professional is asked to take on the responsibility for starting up and leading systematic competitive intelligence work in the organisation (see Table 10.3).
3. The communication department is about to acquire a computer-based media monitoring solution – the information professional is participating (see Table 10.4).
The role of the information professional

Case: Information professional’s role in the technology intelligence process

In 1999 Margareta Nelke had been for ten years the manager of the unit at Tetra Pak which, after several changes of name, at that time was called the Research Intelligence Library. At this time an innovative process had started at Tetra Pak to work in a process-oriented way with research and innovation. The first phase in this innovation process consisted of a business and technology intelligence module. When Nelke heard about the innovation process she contacted the global R&D manager and discussed the possibility of the library hosting the technology intelligence part
of the intelligence process. After some discussions the management decided on this and Nelke was offered the position as the global Technology Intelligence Process Owner.

The innovation process was organised as a number of modules with a process owner for each module. As the intelligence process was divided into Business Intelligence and Technology Intelligence there were two process owners for this phase. Some other phases were Strategy and Planning and Product Development. The process owners had regular meetings to discuss development and implementation.

The Technology Intelligence Process (TIP) was defined as the chain of activities to identify and transform the disaggregated, unstructured mass of information and knowledge on technology-related opportunities, threats or developments into manageable intelligence to be acted on. Nelke’s task as a process owner was to manage the process development and implementation and to organise the process network. The process network consisted of a number of local process owners at the different R&D sites. They were responsible for the local implementation of the process.

In addition to this, a network of key technologies was formed. The aim of the network was to conduct continuous environmental scanning and produce key technology intelligence reports three to four times a year. These reports were also managed in the TIP system. Once or twice a year there were meetings with the Key Technology managers and the process owner.

The purpose of the Technology Intelligence Process was to offer a working model, methods and tools to create and exchange technology intelligence to support innovation and strategic decisions. The idea was that before any product development started the R&D people should go through the TIP to ensure that the necessary investigations

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**Table 10.4 Scenario 3: The communication unit is about to acquire a media monitoring solution**

<table>
<thead>
<tr>
<th>Task</th>
<th>Information professional</th>
<th>Communication unit/management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify purpose and expectations</td>
<td>Participates</td>
<td>Manages/makes decisions</td>
</tr>
<tr>
<td>Draw up the business environment map</td>
<td>Facilitates sessions or participates</td>
<td>Manages</td>
</tr>
<tr>
<td>Make the specifications of the system</td>
<td>Participates</td>
<td>Manages</td>
</tr>
<tr>
<td>Acquisition</td>
<td>–</td>
<td>Acquires and owns</td>
</tr>
<tr>
<td>Manage the search profiles</td>
<td>Manages and modifies in cooperation with the supplier</td>
<td>Gives feedback</td>
</tr>
<tr>
<td>Select the sources</td>
<td>Manages</td>
<td>Participates</td>
</tr>
<tr>
<td>Evaluate</td>
<td>Participates</td>
<td>Manages</td>
</tr>
</tbody>
</table>
had been done before starting the actual development work. They should get knowledge of the state of the art through information research in literature, patents and Tetra Pak’s own development reports.

An important part of the work was to define the users’ short-term and long-term needs of information and intelligence. Examples of short-term needs were to:

- solve technical problems;
- investigate prior art;\(^4\)
- identify business partners;
- feed information to projects;
- conduct competitor analysis;
- increase the awareness of and focus on the external business environment.

The more long-term needs were mostly at the management or corporate level. Examples of long-term needs were to:

- anticipate threats;
- identify new business opportunities;
- identify technology road maps;
- increase technology knowledge;
- save development costs;
- conduct technology assessment;
- monitor emerging technologies.

The whole innovation process was published on Tetra Pak’s intranet and could be accessed by those authorised. In the technology intelligence module there were, besides working models and documents, a number of tools available for the R&D people. Examples of tools were:

- guidelines on how to create technology environment maps;
- source guides with links to important information resources (subscription-based or free on the Internet);
- templates of intelligence reports;
- lists of members of intelligence networks.

One important part of the implementation was to train the users of the tools. This was done by the Technology Intelligence unit or by local process owners.

For some time Nelke simultaneously held the positions of Technology Intelligence manager and TIP owner but the idea was to let go of the position of manager and instead focus on the role as a process owner. Another manager for the Technology Intelligence unit was recruited and Nelke concentrated on developing and implementing the process together with the Business Intelligence process owner. During Nelke’s last period at Tetra Pak she worked together with the business intelligence process owner to merge business and technology intelligence into one single intelligence process.

The work as an intelligence process owner was demanding but very stimulating. The easier phases were to develop the process and the tools. The most challenging phases were to implement the process in the whole R&D organisation – a work that was not completely finished when Nelke left Tetra Pak in 2004 to start her own business.
Notes

2. The journey from Library to Technology Intelligence is described in Nelke (2012).
3. The innovation process is described by Deschamps and Nayak (1995).
4. Prior art consists of all publicly available information on a subject. Prior art investigation is, for example, a mandatory part of the patent application process.
The problem for libraries in the twenty-first century: the need to accept a paradigm shift

Abstract: Librarians need to accept that electronic resources and the ongoing shift to the use of electronic information in everyday life make traditional library services and traditional approaches to librarianship increasingly irrelevant. Recognition of the dependence of the modern library on IT must be accepted in order to compete with other information professions and service providers. Building on existing innovations, librarians can work to change libraries, learn new skills, and convince users that fully electronic libraries constitute valuable assets worthy of their support.

Key words: electronic library, electronic resources, paradigm shift, perceptions of librarians, professional identity, user expectations.

Libraries have made some progress in terms of providing electronic resources, creating new positions with appropriate skill sets, and reorganizing work to serve users better. This progress has been uneven, however, with wide disparities among institutions and communities. Knowledge, financial resources, and receptivity to change vary among libraries and those who work in them. Legacy print collections, workflows, and pools of employees with limited or inappropriate skill sets are holding libraries back from making important changes, but most importantly, the idea of the traditional brick and mortar library with services and a professional identity based on books is the greatest problem. As a group of Nigerian librarians recently put it, “There is no gainsaying the fact that academic and research libraries that still rely on traditional services alone are on the verge of extinction” (Igwe et al., 2013). Some librarians only reluctantly accept change as a means of
After the Book

temporarily staving off disaster, but they need to accept what is lost and move on for good. Only then can libraries become creative and dynamic institutions that meet the needs of contemporary users.

The information architect, Alex Wright, wrote about his impression of libraries in *Glut: Mastering Information through the Ages*:

Today, if you walk into almost any library, you will find what is still, at its core, a nineteenth-century institution. The primary feature of most libraries is still a set of long shelves populated by industrially printed books, organized according to a proscribed hierarchical system of call numbers, maintained by specially trained workers laboring in a highly regimented organizational system. The old card catalog may have given way to computer terminals, but the underlying organizational and ontological structures of the modern library have hardly changed at all. Librarians still follow cataloging practices that originated in the 1850s; library organizations are notoriously top-down, hierarchical, and process-oriented operations. And like steelmills, factories, secondary schools, and other institutional offspring of the nineteenth century, libraries are struggling to reinvent themselves in the postindustrial age. (2007: pp. 166–7)

**Print fetishism: information as object**

Information in the physical library is quite literally an object, a printed book, a periodical, a reel of microfilm, a map, or even a DVD. Morell D. Boone has written about a paradigm shift for libraries from the perspective of a monastic culture in which print materials are protected to a marketplace that is capable of providing modern competitive services (Boone, 2003). Leaving aside the intrinsic value or potential use value of the information stored in these containers, the physical library (absent any electronic resources) is necessarily a physical repository. Generations of librarians have put great energy into developing and protecting growing collections of information objects for many years, sometimes even when the information contained in these objects is less than unique or considered of marginal value. Ranganathan’s (1963) third law of library science “every reader his [or her] book,” not to mention his fifth law, “The library is a growing organism,” have been taken quite literally in collection development. Electronic resources
require libraries to take a different approach to collection development and other information services.

Libraries in the twenty-first century are defined by the range of information services provided to a specific constituency or group of users, not by a physical building or collections that are held. Information can be held on servers anywhere around the world, but access for a particular user is determined by legal and technical requirements, not to mention discovery or their ability to find that the information exists at all and is relevant to their research or other information needs. The library’s primary mission in developing the collection is to provide access to information, not necessarily to store or preserve that information. Some libraries will continue to have a repository function that encompasses materials in diverse formats, but other libraries will no longer have physical collections or even digital repositories of any kind.

**How librarianship is defined by the book**

Modern librarianship developed in the print era and is intrinsically linked with the physical library. The history of the library is considerably older than the history of the librarian and while it may not be entirely fair to do so, we can roughly date the emergence of the modern profession using the formation of the American Library Association (ALA) in 1876 in the USA and the Library Association (LA) in the UK in 1877. While both organizations evolved separately and had distinct approaches to higher education for librarians before recent times, both organizations arguably share primary responsibility for developing the modern profession as we know it today.

What were some of the assumptions behind the development of modern librarianship? First and foremost, librarians work in libraries. Second, the work of both public and technical service specialists was derived from physical collections of materials. Apart from interlibrary loan and other more complex services that developed later, librarians spent their time acquiring, cataloging, organizing, and providing reference service based entirely on physical collections. Information that was outside the boundaries of the physical library was often the province of the archivist, the museum curator, or even the journalist, but libraries were very much bounded objects that continued specific types of information objects.

Librarians were associated in the popular mind very early on with books and, as a recent report from OCLC shows (DeRosa et al., 2011), that association still lingers among users. The close association
between librarianship and books is an internal problem that limits our profession’s ability to reform itself, but just as problematic is the impact of this association on external support for librarianship. If this situation continues, librarians risk the problem of seeming and becoming obsolete. A professional identity based on abstract information services rather than physical items is necessary for the librarian to survive in the twenty-first century.

**Information vs. delivery systems**

Focusing on information in the abstract should help librarians and other personnel who work in libraries to understand that the physical containers of information, books, CD-ROM, newspapers, or microfilm, are not what libraries exist to provide. Libraries exist to provide services based on information. Since information is being created at a faster rate than at any other time in human history this mission offers substantial opportunities to librarians and other information professionals. Given improvements in computing and increasing reliance on big data, this trend is only likely to continue.

There are many opportunities and a growing need for instruction or education about information. As educators and students are busy, librarians can increasingly fill a widening gap in higher education in which they provide supportive information services to help ensure that students integrate sound research methods and best practices for managing different types of information into all of their academic work. Librarians can also assist users with managing their personal information online and provide practical tips about appropriate and inappropriate uses of social media. Librarians can also help to track changes in technology, evaluate options for users, and teach users how to make the best possible use of new technology.

Again, given the rich opportunities for instruction and the reduction in the importance of the repository or warehouse function for libraries it is tempting to assume that no technical services functions or personnel will be needed or that only a skeleton crew with outsourcing and automation will be sufficient. This is not the case. The print repository function is being removed off site, but an electronic repository function is growing. Viable libraries will be expected to manage, if not directly store, increasing amounts of data and other electronic information, not just academic journals or e-books. Negotiating contracts for electronic resources, applying metadata to locally created collections, advising
The need to accept a paradigm shift

vendors about outsourced metadata, troubleshooting access problems, setting up new software, and maintaining a strong IT infrastructure are just some of the many roles for technical services that are expanding, not diminishing in importance. Focusing on information as object rather than information as service can lead to confusion and incorrect approaches to downsizing and automation, especially in technical services.

Technical services units in the nineteenth century, and the twentieth century to a great extent, could sometimes afford to take a more deliberative approach to their work by choice or necessity. Librarians and support staff were generally diligent, engaged, intellectually curious, and motivated to be productive, but this was not always the case. Furthermore, not all units had the necessary human and material resources required to complete their work quickly or adapt readily to changing standards. In more than one large academic library this author has seen multiple storage rooms filled with books waiting to be cataloged that were likely never touched. Given that most libraries were physical warehouses with collections that included both high and low demand items, it should be no surprise that once items were purchased, received, cataloged, labeled, and shelved, there might be no need for additional work, at least not for previously cataloged materials, for which demand was likely low anyway. Electronic resources are quite different. Platforms are constantly being updated. Both hardware and software quickly become obsolete. As access to electronic resources is often leased, even the economic transaction to acquire most resources becomes an iterative process that requires re-evaluation and assessment of different business models rather a simple one-time purchase from a preferred provider.

Traditional acquisitions work has been largely replaced by a more complex electronic resources acquisitions model. Mariella Pilgrim and Arlene Dobaille at the Alma Jordan Library of the University of the West Indies in Trinidad & Tobago have written about their institution’s recent journey from print to electronic serials. Their previous print process could be summarized in four basic steps: (1) request; (2) order; (3) receive; and (4) catalog. Their electronic acquisitions process contains many more steps: (1) initiate contact; (2) trial; (3) user feedback, usage statistics; (4) negotiation and license agreement; (5) authorized signature of university librarian; (6) purchase; (7) register/activate; (8) e-resources finder/backend database; (9) administrative record keeping/data storage (Pilgrim and Dobaille, 2011).

Some libraries might describe these steps differently or include additional ones, but this account represents the general complexity of managing electronic resources for acquisitions.
IT and the library

IT is foundational in the twenty-first century library. Having a website that is down is worse than closing the physical doors to the building because it will actually impact more users. One notable example of this would be the ten-year study of serials usage at the University of South Carolina (USC) School of Medicine Library that showed an 85 percent decline in the usage of print from 1992 to 2002, including print journals that had no electronic counterpart (Rosati, 2006). Traditional librarians who preside over mainly physical collections are often loathe to admit it, but regular stacks and reading rooms without Internet access are increasingly study halls and refuges for those unfamiliar with computers. Libraries need to provide modern spaces that are well equipped to manage IT, but service is more important than space.

Libraries need to review and define the scope of the information services with an emphasis on developing sustainable budgets and programs for IT. If necessary, this could require consolidating positions in other library operations, especially those responsible for managing shrink print collections, but may also require a careful balancing of outreach, information literary, and liaison functions with IT and other public and technical service functions. As an example, would it make sense for a library that serves a small liberal arts college to employ both a physics information specialist and a mathematics information specialist without having an emerging technology librarian?

Electronic resources are much more convenient to use and have many advantages over print resources, but libraries do need to invest in technology support in a way that was completely unnecessary in the print era. Delivering information to users through the web requires that libraries build usable websites, troubleshoot access problems, support access for user devices that are continuously evolving, and make continuous improvements to every aspect of service. Few, if any, commercial banks have a website in 2013 that is identical to what they provided in 2001. The delivery systems for electronic resources are superior to print resources, but constantly change because platforms, devices, and user preferences change.

Constant change as the new routine

Libraries, especially academic libraries, have to balance academic conservatism with business pragmatism in order to function and continue...
The need to accept a paradigm shift

as respected contributors to academia and the wider community at large. Websites have to be updated routinely and as quickly as possible. The library has to adapt its IT infrastructure as quickly as many users select new technologies, perhaps even quicker in order to introduce new tools and techniques to users. Too often, libraries have to catch up with users because of lack of funding, staff time, or staff with appropriate skills. Gathering information about users will become increasingly necessary to provide users with appropriate information. Work behind the scenes is just as important in twenty-first century libraries as work in public or in the classroom.

As libraries developed in the nineteenth and twentieth centuries, conservation was often more important than innovation. Identifying, collecting, and acquiring collections of books meant to be held indefinitely for the sake of posterity, literally preserving human knowledge as a kind of secular temple, was the mission of the library. This state of affairs sometimes produced librarians and support staff who were overly suspicious of change and tended to prefer established standards unless proof in advance of the value of innovation was provided. Experimentation and testing of new services was generally avoided or so bogged down in rigid procedures that change was incremental unless driven forward by external forces such as changes in vendor-supplied services, budget cuts, or demands by funding agencies. Change for the sake of change is not helpful, but being resistant to change is even worse in the twenty-first century. Science, technology, and the frontiers of human knowledge are fluid and library print collections cannot keep up. Many organizations suffer from inertia unless driven forward by circumstances, but those who manage information in the so-called information age do not really have the luxury of clinging to the past.

Organizational culture in libraries can sometimes block much needed changes. Deep conflicts exist in many libraries regarding the purpose of the library, professional values, staff perceptions of use and users, judgments regarding wants and needs, the precise role and authority of decision makers, and what library personnel know or think they know about users and themselves (Raber, 1995). Successful implementation of any new organizational changes in libraries will require careful assessment of attitudes and reconciling conflicts whenever possible. Of course, one cannot allow even determined groups to prevent necessary changes from taking place because the very existence of libraries in the twenty-first century is what is ultimately at stake.

Electronic information is much more useful and more flexible than print collections. When nursing titles become out of date, these must be
physically weeded from the library, but the library could theoretically hold multiple generations of nursing titles in electronic format being careful to apply different types of metadata in order to change search and discovery results, but also to label some information as outdated. Electronic information can be manipulated conceptually rather than only in space like physical collections. An important aspect of change and a hidden cost for libraries that most are only gradually becoming aware of is that the metadata about electronic information requires constant manipulation and improvement in order to make it discoverable and useful to different user types. To think that information need be cataloged only once is an assumption of the twentieth century that no longer applies in the twenty-first. While much of the process of applying “new” metadata can be automated, some professional librarians will need to assess and reassess how large data sets, works of science, and materials about politically sensitive subjects are cataloged.

The importance of metadata in developing a strong infrastructure for the Semantic Web cannot be overstated. Gail Hodge reminds us that metadata schemas serve many different purposes for different types of users such as “resource discovery, location, collection organization and management, administration, rights management, technical reproducibility and preservation” (Hodge, 2005, p. 44).

Enhanced archival description (EAD) for special collections, ONIX International for e-commerce, and the ISO Standard for Digital Geospatial Metadata are just some of the many types of non-MARC metadata that are increasingly important to libraries. Metadata frameworks, crosswalks, and registries that integrate controlled terminologies can help ensure interoperability (Hodge, 2005). Understanding how to integrate this type of information across multiple scholarly domains is the natural work of librarians or other information specialists and not IT per se.

Metadata for managing information internally is also of importance to libraries. Librarians at the University of Saskatchewan have experimented with adding a variety of descriptive tags, developed apart from formal metadata schemas, to enhance internal tracking and decision making regarding electronic resources management. A locally created attribute such as “source” had the following possible values: locally-created, vendor-subscribed, consortium, open access, and one-time purchase or “format/type” that could be index, aggregate, document collection, e-book collection, or reference (Sorensen et al., 2011, pp. 132–3). The University of Saskatchewan Library did have an ERM, but found it advantageous to apply admittedly imperfect but useful home-grown
metadata and business intelligence (BI) because they could quickly revise and deploy small applications rather than wait for the longer-term process of correcting complex software and tools (Sorensen, et al., 2011).

**The expectations of users**

Some librarians have arguably skewed assessment and their entire understanding of user expectations based on an implicit goal of preserving the physical library. Some studies have reviewed late night students as being critical to users because students have honestly answered that they value the library for being open and for being a quiet place to study. Dramatic increases in online usage, more comfortable and alternative study spaces to libraries, and the overall cost to institutions have been ignored as many academic libraries extend hours in a desperate attempt to keep redundant physical structures open.

Both users and librarians tend to devalue the online or electronic library and overvalue the physical one when considering the overall identity of the library and the services it provides. Partly this is due to insufficient or poor web design, unsystematic or dated branding of electronic resources, and a general lack of identification with and education about the electronic library on the part of librarians. As long as librarians put forth the book as their brand, users will not sufficiently associate librarians with electronic resources, emerging technology, data management, and instruction about how to use the increasingly complex universe of information. As Carson Block, former President of the Colorado Public Library Association, wrote in a recent article about this very issue, “Books are our current brand, but in a world that is shifting to electronic forms, and to fulfill our public good role, our brand needs to change,” (2012, p. 10).

Users generally expect strong customer service from all library personnel, up-to-date and relevant websites and research guides, time saving and accurate discovery tools, as well as technology support when they encounter access problems. Libraries also need to find more ways to accommodate users with disabilities, including learning disabilities, in order to ensure that increasingly electronic information resources meet all needs. Users that have experience with Google and Amazon also expect convenience and rapid delivery of information when the library has to use resource sharing or find other ways to provide information that is technically not part of the library’s collection.
The emergence of new information profession(s)

Librarians also need to be more responsive, adaptive, and flexible because of growing competition from other professional groups. Information science, the sometimes competitor, but arguably closely related profession is one example of a potential competitor, but more likely to influence and perhaps threaten libraries are new types of documentation and information specialists emerging from IT, as well as the disciplines of Education and Communication. Some of this competition is amorphous and arises from the emergence of overlapping activities, but some competition is better organized and more self-conscious about occupying professional space that is at least partly held by librarians.

Apart from information science, in which important differences with librarians are likely to become rhetorical over time – in truth, information scientists and librarians are increasingly the same people – librarians need to pay special attention to efforts by online publishers, IT consultants, and other academic groups arising from Education to step into areas that may be better served by librarians. Teaching users how to evaluate information, optimize the use of online discovery tools, and manage their data are all natural extensions of information literacy work pioneered by librarians, but experts in pedagogy, information architects, and usability specialists from other disciplines will also want to weigh in on these important subjects and may also find institutional homes on campus outside the classroom. Competition is a good thing and given the complexity of some problems it is only natural that multiple disciplines may pursue answers, but librarians will need to constantly map out and protect their role as information specialists in the online world in a way that was unnecessary in the print era. It was difficult to duplicate the services offered by print libraries without creating another library, but virtual libraries are less well defined and it will be easier for other groups to duplicate some electronic library functions.

General developments

Librarians will continue to face competition, both for positions and in the realm of ideas, with experts in records management, archives, and other professional groups that investigate ways to organize the ever growing amount of information generated by routine commercial, government, and research activity. Documentation and records management experts,
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not to mention archivists, have been around for a long time, but librarians need to keep track of new developments and continuously address new ideas and useful innovations proposed by other types of information specialists.

Human–computer interaction (HCI) has developed as an interdisciplinary field that emerged from the desire to improve how computers are designed and deliver information and provide service to human users. Some efforts have been made to develop HCI as a separate profession, but interestingly Indiana University has integrated both its HCI program and its Library Science program into a larger School of Informatics (Indiana University School of Informatics and Computing, 2013). Informatics, interdisciplinary programs concerned with the interaction between people, information, and technology, is of growing importance. Programs are relatively new and the curriculum is still in development, but usually consists of the study of computation and another academic discipline such as biology, sociology, or even art (Groth and Mackie-Mason, 2010).

**Librarians without libraries?**

Many librarians in the twenty-first century will not work at physical libraries at all, but will still be able to carry out their designated functions as information specialists. Special libraries at hospitals and law offices where space is at a premium and expensive will increasingly be replaced by electronic resources. Librarians will continue to have office or meeting space that can be used to do their work or support users, but reading rooms, spaces for non-existent print collections, and any other space assigned to libraries will strike funding bodies as unnecessary extravagances. Physicians, attorneys, and corporate executives have access to their own computers and library IT infrastructure is often integrated into the larger parent organization’s IT infrastructure.

Libraries with their own designated buildings will have a very different footprint than in the print era and likely take up much less physical space. Academic and public libraries that have large numbers of personnel and a diverse number of specialized librarians will need computer labs, classrooms, or other meeting spaces in addition to office space in order to provide optimal space. Libraries with their own servers and IT specialists will obviously need room for them as well. Having a distinct building designated as a library is likely to become increasingly rare, however, because libraries that already have large buildings will
probably want to share them with other entities or co-habit buildings previously owned by or assigned to other organizations to reduce costs.

Academic libraries are likely to face three distinct patterns in developing space in the twenty-first century as the transition from print to electronic collections continues: (1) lend space to other campus units in the form of classrooms, meeting spaces, or areas retained by the library, but no longer needed for library functions; (2) share space with other permanent occupants such as campus IT, student learning centers maintained by other types of information specialists, other administrative units, or even other academic disciplines; (3) relocate to another existing space or building that has a better infrastructure for IT such as more electrical capacity, better HVAC (heating, ventilation, and air conditioning), or a better wireless network; or (4) invest in new buildings, either standalone or shared with other units. Converting stacks space to other uses is one problem for libraries and their parent institutions, but the need to have physical infrastructure that is appropriate for computers, mobile devices, and other technology is another.

Public libraries will face similar options, but with the important caveat that it might be somewhat more difficult to find partners in space conversion and other arrangements. Many public libraries are already located in close proximity to other community centers or points of interest, but some are isolated. Fully electronic libraries may want to consider relocating to shopping malls, other shopping districts, government buildings, or near schools where their libraries have been forced to shut down due to budget cuts. The Design Institute for libraries recently held by the Library Journal in South Carolina emphasized the benefits of colocation of libraries with other centers of public interest, as well as partnerships (Kuzyk and Fialkoff, 2011). Public libraries might also want to consider setting up public access terminals or computers in strategic locations to meet public information needs, although some legal and technical questions would need to be worked out.

A tale of three libraries

The transition of the modern library from information services based on print to a fully electronic or digital library can be considered in three distinct phases. Obviously, some trends will have been anticipated or initially developed in the previous phase and there are many differences among libraries with some having experimented with new organizational
forms and services before others, but a general scheme can be applied to most academic libraries in North America.

The first phase, the *automated print library*, arguably began in the 1970s and lasted through the 1980s with print libraries adopting ILSs and OPACs in order to manage and make their physical collections accessible to users. This early phase of automation brought the computer into the library, even if most computers available to users were simply access terminals for searching the online catalog. Libraries had to bring in some IT experts during this early phase of automation and also improved their ability to gather and analyze statistics that measured print usage and visits to the library. Organizational structures tended to remain conservative with most librarians working in public or technical services.

The *hybrid library* began in the 1990s as electronic resources, mostly online journals, were offered to users and libraries developed websites. This phase arguably is ending only now as new fully electronic libraries are developed and other libraries begin to phase out their print collections. As discussed earlier in this book, the hybrid library assumes a mixed collection of physical and virtual materials. Also, the hybrid library assumes a mixture of personnel types with some personnel working primarily with print resources and others managing electronic resources. Libraries have also greatly expanded their definition of service during this phase and emphasized other functions such as education and applied information services like GIS.

The final phase, the *electronic library*, is the subject of this book, but the precise characteristics of electronic libraries cannot be mapped out for the distant future, perhaps only 10 to 15 years into the future. Only an extrapolation and analysis of current trends is generally feasible. While there is some overlap between the phases and the unique history of individual libraries will vary considerably, Table 3.1 overleaf summarizes some of the most important characteristics across most libraries.
<table>
<thead>
<tr>
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<th>Automated print library</th>
<th>Hybrid library</th>
<th>Electronic library</th>
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<tbody>
<tr>
<td>Systems management</td>
<td>ILS</td>
<td>ILS</td>
<td>Library management system</td>
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<tr>
<td></td>
<td>ERM</td>
<td></td>
<td></td>
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<tr>
<td>Discovery tool(s)</td>
<td>OPAC</td>
<td>OPAC</td>
<td>Discovery services</td>
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<tr>
<td></td>
<td></td>
<td>A–Z List</td>
<td>Other services optional</td>
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<td></td>
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<td>Database List</td>
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<tr>
<td></td>
<td></td>
<td>Discovery layers</td>
<td></td>
</tr>
<tr>
<td>Information resources</td>
<td>Print and other physical materials</td>
<td>Print and other physical materials</td>
<td>Electronic resources</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print materials</td>
<td>Book stacks</td>
<td>Book stacks</td>
<td>Special collections and archives only in libraries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remote storage</td>
<td>Repositories</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Repositories</td>
<td></td>
</tr>
<tr>
<td>Circulation of print materials to users</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Reading rooms</td>
<td>Utilitarian furniture in formal environment</td>
<td>Comfortable furniture in informal environment</td>
<td>Moveable furniture in informal environment</td>
</tr>
<tr>
<td>Food and drink</td>
<td>Forbidden</td>
<td>Allowed in some areas</td>
<td>No restrictions in most areas</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Reading lamps</td>
<td>Some computer workstations, some wireless</td>
<td>Computer workstations and other technology embedded throughout</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wireless throughout</td>
</tr>
<tr>
<td>Metadata</td>
<td>Anglo-American Cataloguing Rules, Second Edition (ACCR2) rules applied to MARC records</td>
<td>ACRR2 rules applied to MARC records Dublin Core, EAD, and other metadata schemas</td>
<td>RDA rules applied to MARC records Dublin Core, EAD and other metadata schemas</td>
</tr>
</tbody>
</table>
| Collection development Business models | Highly stable  
Content acquired from traditional publishers/jobbers  
Permanent ownership of physical materials | Unstable  
Content acquired from multiple sources  
Permanent ownership and leasing of content | Unstable  
Content acquired from multiple sources  
Rights to content vary widely |
<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Personnel types</td>
<td>Mostly support staff supervised by professional librarians</td>
<td>Roughly equal numbers of support staff and professional librarians</td>
<td>Mostly professional librarians and other professionals with few support staff</td>
</tr>
<tr>
<td>Outsourcing</td>
<td>Minimal</td>
<td>Some cataloging and IT</td>
<td>Varies widely by library size and type</td>
</tr>
</tbody>
</table>
| Customer service | Public service desks for reference and circulation | Public service desks for reference and circulation  
Learning commons  
Technology support  
Professional consultation | Learning commons  
Technology support  
Professional consultation |
| Types of professional service | General reference | General reference  
Subject expertise  
GIS  
Informatics  
Data management | Subject expertise  
GIS  
Informatics  
Data management |