

2 DESIGNING ACADEMIC LIBRARIES FOR THE 21ST CENTURY: ISSUES OF ACCESSIBILITY AND USABILITY

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Academic libraries in the 21st century face many challenges to meet the changing needs of students and staff. This paper discusses the problems of designing the accessibility and usability of the physical spaces, collections and services of modern academic libraries. Existing guidelines for accessibility and usability of libraries are presented and critiqued.

Keywords: Library Design, Accessibility, Usability, Guidelines.

1. INTRODUCTION

Academic libraries in the 21st century face many challenges to meet the changing needs of students, faculty and staff who increasingly expect instant access to all information “online”. At the same time, these library users need comfortable, accessible places to study, to do their research, and to work on group assignments, which are increasingly popular. Added to this mix is the fact that there is still a need for print, because many items are either not available online or are better served in a print format.

The very nature of academic libraries is changing rapidly. The ideal modern academic library is flexible, strategic, and proactive. It is extremely user-oriented, rather than librarian-oriented. New technologies in access and in storage allow for more space for the reader, and the main focus of the library is moving from being a book warehouse to an active academic centre. The modern academic library both embraces and, at times, creates change. The many technological opportunities now available enable the academic library to reach out to a varied clientele throughout the world, including staff, students and broader communities. Increasingly, academic libraries are partnering with teaching and research faculty to create collaborative learning centres that combine traditional learning environments and new technologies into new, flexible, and adaptable environments to encourage learning, creativity, research, and experimentation. Libraries in this context are attractive destinations, rather than merely storehouses for the printed word.

There are a number of challenges for building, expanding or renovating academic libraries to meet these new requirements. A very important one is the image of the library. It is often perceived that the library is merely a storage place for books and other materials. Many people, including those in a position to provide funding for new library developments, still think of libraries in the traditional way, mainly as a warehouse for books. These older, traditional buildings are not particularly accessible, and have very stringent rules designed to protect the books inside. There is also the notion that libraries are outdated and no longer necessary because everything is available online. While this is certainly not the case, it is important to address this idea in the early stages of new developments, and involve a wide variety of funders, donors, students, faculty and administrators in the exploration of new opportunities for library buildings and services.

New technologies, rather than rendering libraries redundant, are allowing them to expand their services and become integral and accessible focal points for an academic institution. New advances in glass technology allow library buildings to be brighter and more welcoming, and new technologies for book storage or online access allow space for collaborative learning as well as individual study and contemplation. An increasingly popular technology is an automated storage and retrieval system. This is a “robotic storage” solution for books and other items, which are then retrieved through an online catalogue search and picked up at the issue desk a few minutes later. The result is a safe environment for the books, which are easily retrieved, and a considerable amount of space saved that can then be used to create an accessible, innovative library.

The design of the library needs to address issues of both accessibility and usability. Each of these areas will be addressed in this paper. These have interesting parallels with the design of physical and electronic devices and software, from the most simple to the most complex, in which both accessibility and usability are also important challenges.

2. ACCESSIBILITY

Libraries and their services and collections provide a number of challenges in terms of accessibility. Firstly, there is the physical accessibility of the buildings and in particular the various locations within the buildings such as book stacks, desk and computer work areas, classrooms, study rooms and lounges. Cafes are also increasingly popular in university libraries. Then there is the accessibility of the collection — the books, documents, maps, electronic media etc. Finally there is the accessibility of the services and programmes offered by the library, such as the online catalogue or sometimes still a card catalogue for older materials, information databases, technical assistance, reference service and issue desk services. Research libraries have traditionally provided a human reference service, but increasingly they are now adding a variety of virtual reference services, such as dealing with reference enquiries via email, instant message service (IM) or mobile phone short message service (SMS).^{1,2} These developments bring referencing services into the accessibility problems typically related to electronic resources.

The issues of accessibility for persons with disabilities are serious ones in libraries. In 2005, the International Federation of Library Associations developed the “Access to Libraries for Persons with Disabilities Checklist”³ for all types of libraries, including academic libraries, in an attempt to list key areas and issues in libraries deserving specific attention. Its purpose is to:

- Assess existing levels of accessibility to buildings, services, materials and programmes; and
- To enhance accessibility where needed.

It does not yet attempt to cover the accessibility needs of library staff. Table 1 provides a summary of the Checklist.

2.1. The IFLA Checklist

Forrest⁴ presented a case study of applying the IFLA Checklist in an academic library in Scotland, following the introduction of disability legislation for education in the UK.⁵ The IFLA Checklist was used both as a guiding document to plan and implement improvements and adjustments in the library, but also as an accessibility audit of the library after improvements and adjustments had been made. The case study presents information about the application of the Checklist, but unfortunately there is little critique of the Checklist itself. There is a need to “stress test” this Checklist and improve it through use and discussion. One obvious area where more detail could be provided is in the area of the accessibility of services.

The IFLA checklist is a valuable tool for libraries of all sorts, not just new or renovating ones. However, it does not replace communication with relevant campus partners, such as a campus disability office, the information technology office, and the facilities and maintenance services. This is very important during library construction, so attention is given at the point of development.

Table 1. IFLA Checklist — Access to Libraries for Persons with Disabilities.

Physical access	
Outside the library	Sufficient parking spaces marking with the international symbol for the disabled Parking close to the library entrance Clear and easy to read signposting Unobstructed and well lighted access paths to the entrance Smooth and non-slip surface at the entrance If needed, a non-slip and not too steep ramp with railing next to the stairs Railings at both side of ramp Entry phone accessible for deaf users
Getting into the library	Sufficient space in front of the door to allow a wheelchair to turn around Entrance door wide enough to allow a wheelchair to enter Automatic door opener reachable by a person in a wheelchair No doorsteps — for easy wheelchair access Glass doors marked to warn visually impaired persons Security checkpoints possible to pass thorough with a wheelchair/walker or other mobility aids Stairs and steps marked with a contrasting colour Pictogram signs leading to elevators Well lighted elevators with buttons and signs in Braille and synthetic speech Elevator buttons reachable from a wheelchair
Access to materials and services	
The physical space	Clear and easy-to-read signs with pictograms Shelves reachable from a wheelchair Reading and computer tables of varying heights throughout the library Chairs with sturdy armrests Visible and audible fire alarm Staff trained to assist patrons in case of emergency
Toilets	The library should have at least one toilet for disabled persons, equipped with the following: <ul style="list-style-type: none"> ● Clear signs with pictogram indicating location of the toilets ● Door wide enough for a wheelchair to enter and sufficient space for a wheelchair to turn around ● Room enough for a wheelchair to pull up next to the toilet seat ● Toilet with handles and flushing lever reachable for persons in wheelchairs ● Alarm button reachable for persons in wheelchairs ● Washbasin, mirror at an appropriate height
Circulation desk	Adjustable desk Induction loop system for hearing impaired persons Chairs for elderly and disabled customers Accessible self-service circulation stations
Reference/information desk	Adjustable desk Organized “queue system” in the waiting area Chairs suitable for elderly and disabled patrons Induction loop system for hearing impaired persons
Department for persons with reading, hearing and other disabilities	
	A centrally located department with talking books and other materials for persons with reading disabilities A coloured (yellow for visibility) tactile line leading to this special department Clear signs Comfortable seating area with bright reading light A tape recorder, CD player, DAISY (Digital Accessible Information System) player and other equipment to complement the audiovisual collection Magnifying glass, illuminated magnifier, electronic reader or closed-circuit television (CCTV)

Media formats

Special media formats to support people with different types of disabilities:

- Talking books, talking newspapers and talking periodicals
- Large print books
- Easy-to-read books
- Braille books
- Video/DVD books with subtitles and/or sign language
- eBooks
- tactile picture books

Computers

- Designated computer workstations adapted for patrons in wheelchairs
- Adaptive keyboards or keyboard overlays for users with motor impairments
- Designated computers equipped with screen reading programs, enlargement and synthetic speech
- Designated computers equipped with spelling, and other instructional software suitable for persons with dyslexia
- Technical support for computers (on-site, if possible)
- Staff capable of instructing customers in the user of computers

Services and Communication

Staff training for disability awareness

Providing services and information

Working with organizations supporting people with disabilities

In many countries there is legislation defining accessibility requirements for disabled people. Two examples are the Disability Discrimination Act (DDA) in the United Kingdom and the Americans with Disabilities Act (see www.ada.gov for the ADA Standards for Accessible Design). They vary in their coverage but are often central government laws that include design standards which must be imbedded into virtually all building projects. Most architects and builders have included these in their basic services, and integrated them into their designs. There are still areas, of course, that are not explicitly covered by such laws, and there lies both challenges and opportunities. In library design, enhancing accessibility can also enhance the beauty and usability of the building and library services. For example, furnishing options can be used to serve a wide range of users with a wide range of needs. Flexibility is a key component. As new products and styles become available they can be integrated into current designs, and current designs can be changed to meet them. Carpeting, for example, provides several functions in addition to being simple floor coverings. It can add colour and vibrancy, it can soften sound, and it can assist in wayfinding for people who are visually disabled, by using different colours and textures to define specific paths. Accessible library design requires thought, collaboration, and creativity. A well-designed, accessible university library building is a centre of a university and available to all who require it.

3. USABILITY

As with accessibility, the usability of an academic library covers the physical spaces, the collections and the services and programmes offered by a library. As with usability of computer systems, more thought has been given to usability than accessibility,⁶ and guidelines are extensive. Johnson⁷ has collected many such guidelines, which are summarized in Table 2 (sources for the guidelines can be tracked via the table on her blog). In contrast to the accessibility guidelines, these guidelines illustrate another problem with many guidelines — too much detail which may overwhelm potential users. There is too much reference to current technologies which may become redundant very quickly (Flickr, Google, Firefox) and very specific means for achieving particular goals. For example, it is suggested that staff be asked to wear name tags, so they are easily identifiable. This may not be an appropriate in all academic or cultural situations and there are many other ways to make staff identifiable. So the guideline is at too specific a level to be most useful and applicable. But if they are treated as truly “guides” rather than strict instructions, they can greatly aid a library in its quest to achieve a high level of usability.

4. CONCLUSIONS

Academic libraries in the 21st century face many challenges to meet the changing needs of students and staff. This paper has discussed the problems of designing the accessibility and usability of the physical spaces, collections and services of modern academic libraries. Existing guidelines for accessibility and usability of libraries have been presented and critiqued. Further work is needed to develop a comprehensive but high level set of guidelines to cover both accessibility and usability for modern library developments.

Table 2. Usability for libraries.

General	
Conduct a usability study	Gather some of your patrons, ask them to find something in the library, and analyze their behavior
Make use of what users already know	Model your design after things that your user is likely to be familiar with already
Use descriptive wording	Instead of using project names for something, call it what it really is. For example, instead of calling a search engine “Find It!,” simply call it a search engine, or “Find It! Search Engine.”
Avoid overwhelming users	Give enough information to provide guidance, but not so much that they’ll be confused.
Be friendly	No one wants to visit a library where the staff is rude and unhelpful.
Consider your users	When creating usable design, think about your users and how they’ll be utilizing what you create.
Use common terms	Make sure the words you are using are easily understood by users.
Aim to save time	Make it a goal to help your visitors navigate information quickly.
Make your library desirable	Design and market your library in a way that makes people want to use it.
Library website	
Be consistent	Use the same fonts and design elements on all of your library’s pages so that users always know they’re still on your site.
Put a help link on every page	Don’t leave users stranded. Give them a way to get help no matter where they are.
Use templates	Create a template for your site, and base the design of all pages on that template.
Make your catalog search incredibly easy to find	Most visitors to your library’s website will be looking for items, so be sure to make it easy for them to find what they’re looking for right away.
Check for errors	Make sure that your site does not have any broken links or grammatical errors that will undermine the quality and authority of the library.
Create effective navigation	Use navigation that is simple and easy to understand.
Put your most important information up top	Avoid making your patrons scroll to find information. Put all of your most used functions and information high in the display field.
Check for accessibility	Ensure that your website is usable for everyone by assessing your site’s accessibility.
Be action-oriented	Let users choose what they want to do, like “reserve an item.”
Meet specific goals and tasks	Consider what your site’s visitors are coming to do, and make it easy for them to do it.
Design for quick loading	Don’t make users wait around for information. Create a quick loading website.
Create a footer “mullet”	Put all of your fun stuff like Flickr images, news, and events in your footer.

Leave bread crumbs	Show your users where they should go by putting lots of links in your website's text.
Use lots of white space for important elements	Place a good deal of white space around important site elements like your search box in order to draw attention to them.
Create a task-centered home page	Instead of overwhelming visitors with information, give them areas where they can do tasks like search for a book or get directions to the library.
Make your search as Google-like as possible	Most visitors will intuitively understand how to do searches on Google, so model your search after theirs so that they'll be able to use it easily.
Offer larger font sizes	Allow users to choose what size text they'd like to use for your site.

Catalogue and search

List your availability	When users search for an item, let them know how many you have available, or when they're expected to be back in the library.
Offer a reservation system	If you don't have an item currently in the library, allow users to sign up to get it when it comes available.
Offer filtering	Allow your visitors to place filters on their search, like non-fiction and poetry, to find exactly what they're looking for without working through a lot for what they don't want.
Provide a search history	Help your patrons remember what they were looking for by offering a search history function.
Share with other libraries	If you don't have a book or item within your library, offer a function that allows users to connect with a library that does.
Use search suggestions	Pre-populate your search field with ideas for what users should be searching for.
Check your logs	Take a look at what your patrons are searching for on your site, and whether or not they're able to find it.
Offer a site search	Go beyond a catalog search and allow visitors to do a search of your library's entire site.

Availability

Make your most often used items prominent	If you have certain selections that are used frequently, make sure they're highlighted and incredibly easy to find.
Weed out your selection	Create a protocol for weeding out unused or unnecessary items so that the ones you actually need will be more prominent.
Use statistics	Find out what parts of your collection are most popular, and expand upon them.
Offer ebooks	Make ebooks available in your collection, and users can take advantage of a new way to enjoy books.
Put as much as you can online	Library patrons like the instant information and ability to make use of resources on the Internet from home and work, so be sure to facilitate this.
Make your help desk obvious:	Put a well-staffed help desk in an obvious place so that users will be able to approach it easily.
Make sure users know they can get a book	Many people do not realize that they can reserve or order books from the library.

Staff

Build camaraderie	Create a staff that enjoys working together, and they'll be better prepared to serve the needs of patrons.
Encourage blogging	Allow your staff to evangelize for your library and get connected with patrons by encouraging them to blog.
Be available	Make sure that you always have enough staff on hand to meet the needs of your library's users.
Support professional development	Encourage your staff to seek out additional education in new media, technology, and other courses that will help them in the library.

Use a wiki	Utilize a wiki for content management so that you can have an effective internal sharing system.
Cross train	Have staff in different departments train with each other, so that everyone has more knowledge to help library patrons when needed.

Library environment

Manage noise	Create quiet learning areas so that patrons aren't disturbed by talking, cell phones, and other distractions.
Use signs to make areas clear	Use large signs to tell people when they're in the childrens section, or a no cell phone zone.
Handle conflict between patrons	Be sure that your patrons aren't driving each other out of the library.
Be positive	Make sure that your signs do not give off a negative or limiting feeling. Tell patrons what they can do, instead of what they can't.
Offer lots of power outlets	Encourage users with laptops to come into the library by offering them an easy way to stay powered.
Make your signs readable	Use a large enough size and clear font to get the point across.
Create stations	Devote an area to reading magazines, another to doing research, yet another to individual studying, and so on.
Offer individual and group spaces	Create areas where individuals and groups can devote their time to study and discussion separate from the main library area.
Create a clean presentation	Don't leave books cluttered on carts and on tabletops—put them where they belong.
Use signs to announce tools	If you have a self checkout machine, make it easy for people to find it with a sign.
Consider acoustics	If you're undergoing new construction or a renovation of your library, ask your architect or contractor to design with sound in mind.
Create a bookstore-like layout	Make your library look like an inviting bookstore to encourage reading and visitors.
Make use of windows	Make the library a more comfortable place by using large windows for natural light.

Interaction

Ask staff to wear name tags	If patrons need help, make it easy to find someone by an identifying name tag.
Offer tours	Familiarize users with your library by giving regular tours.
Have an active email address	Be available through email, and you'll be able to help more patrons.
Ask users what they want and need	Get to the root of what your patrons are looking for by simply asking them.
Blog	Keep patrons updated on what's going on with the library by maintaining a regular blog.
Create exciting events	Get your library's visitors to come in for more than just books by hosting fun and interesting events.
Make use of social networks	Be available and open up interaction on social networks like Facebook.
Use IM	Make your library available for assistance via instant message, so you can be helpful in a quick and easy manner.
Encourage user-generated content	Make it easy for your patrons to be involved in the creation of content.
Hold training classes	Not every visitor to the library will intuitively understand how to use it, even if you've designed an incredibly usable library. Hold training sessions to make it easier for people to navigate your stacks.
Offer RSS feeds	Make it easy for users to stay updated on new additions to the collection, library news, and more by implementing RSS feeds anywhere they fit.
Reach out to visitors	Ask your staff to always be on an active lookout for patrons who seem like they need assistance.
Improve service to remote visitors	Make your library's availability from outside of the library easier and more effective for patrons to take advantage of.
Improve staff's demeanour	Explain and encourage appropriate body language, voice tone, dress, observation, and listening in your staff.
Train regularly	Keep your staff's skills fresh with regular training sessions.

Computers

Install Firefox	With Firefox you can set up a custom experience, including the ability to put links to your library's catalogue on book names.
Designate catalogue and Internet computers	Make it easy for users to know which computers are for browsing the catalogue, and which can be used for the Internet.
Offer more laptops	Users want to make use of laptops, so be sure to have enough to give them what they want.
Allow patrons to use the tools they want	Make instant messaging, YouTube, gaming, and other resources available on your library's computers.
Offer Wi-Fi	If you aren't already, make free Wi-Fi available in your library.

Equipment

Be available for troubleshooting	Have a prominent help desk, and offer a sticker with directions on your equipment.
Check out mp3 players	Make listening to podcasts and ebooks easy with mp3 player check-outs.
Offer a simple checkout system	Don't put a lot of restrictions on how and when patrons can use equipment unless it's entirely necessary.
Offer CD and DVD players	If you're going to offer CDs and DVDs in your collection, make sure your library has players available for patrons to use.
Stay on top of maintenance and repairs	Always make sure that the equipment available to patrons is in good working order.
Lend tools	If you're going to offer how-to books for checkout, make your library a one stop shop and offer tools to do the job as well.

Source: Johnson (2008)

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