

Educating the Net Generation

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Diana G. Oblinger and James L. Oblinger, Editors



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Educating the Net Generation

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Net Generation Students and Libraries

Joan K. Lippincott

Coalition for Networked Information

Introduction

The University of Southern California's Leavey Library logged 1.4 million visits last year.¹ That remarkable statistic illustrates how much a library can become part of campus life if it is designed with genuine understanding of the needs of Net Generation (Net Gen) students. This understanding relates not just to the physical facility of the library but to all of the things that a library encompasses: content, access, enduring collections, and services. Libraries have been adjusting their collections, services, and environments to the digital world for at least 20 years. Even prior to ubiquitous use of the Internet, libraries were using technology for access to scholarly databases, for circulation systems, and for online catalogs. With the explosion of Internet technology, libraries incorporated a wide array of digital content resources into their offerings; updated the network, wiring, and wireless infrastructures of their buildings; and designed new virtual and in-person services. However, technology has resulted in more modernization than transformation. There is an apparent disconnect between the culture of library organizations and that of Net Gen students. This chapter will explore how libraries might better adapt to the needs of Net Gen students in a number of specific areas.

Libraries and digital information resources can play a critical role in the education of today's students. Libraries license access to electronic journals, which provide key readings in many courses, and set up electronic reserve systems to facilitate easy use of materials. Libraries are an important resource for assignments that encourage students to go beyond the course syllabus. They provide access to the marketplace of ideas that is a hallmark of American higher education. Since much of the learning in higher education institutions takes place

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outside the classroom, libraries can be one important venue for such learning. The library can play a critical role in learning directly related to courses, such as writing a paper, and processes related to lifelong learning, such as gathering information on political candidates in order to make informed choices in an upcoming election. Libraries provide collections, organized information, systems that promote access, and in-person and virtual assistance to encourage students to pursue their education beyond the classroom.

It is difficult to generalize, but this chapter will use some characteristics of the Net Gen student that have been described by a number of researchers.^{2a,b,c,d} Given that this generation of college students has grown up with computers and video games, the students have become accustomed to multimedia environments: figuring things out for themselves without consulting manuals; working in groups; and multitasking. These qualities differ from those found in traditional library environments, which, by and large, are text-based, require learning the system from experts (librarians), were constructed for individual use, and assume that work progresses in a logical, linear fashion.

What are some of the major disconnects between many of today's academic libraries and Net Gen students? The most common one is students' dependence on Google or similar search engines for discovery of information resources rather than consultation of library Web pages, catalogs, and databases as the main source of access. Since students often find library-sponsored resources difficult to figure out on their own, and they are seldom exposed to or interested in formal instruction in information literacy, they prefer to use the simplistic but responsive Google. Another disconnect is that digital library resources often reside outside the environment that is frequently the digital home of students' coursework, namely, the course management system, or CMS. Library services are often presented in the library organization context rather than in a user-centered mode. Libraries emphasize access to information but generally do not have facilities, software, or support for student creation of new information products. All of these disconnects can be remedied if appropriate attention is paid to the style of Net Gen students.

Access to and Use of Information Resources

When students use a wide array of information resources that they seek out on their own, they can enrich their learning through exploration of topics of interest. However, with the vast resources of the Web available, students must first make

choices about how to access information and then which information resources to use in their explorations and assignments. Increasingly, students use Web search engines such as Google to locate information resources rather than seek out library online catalogs or databases of scholarly journal articles. Many faculty express concern that students do not know how to adequately evaluate the quality of information resources found on the Web, and librarians share this concern. Libraries need to find ways to make their information access systems more approachable by students, integrate guides to quality resources into course pages, and find ways to increase their presence in general Web search engines. Newly emerging services such as Google Scholar are providing access to more library resources in the general Internet environment. Libraries also need to be more cognizant of Net Gen students' reliance on visual cues in using the Internet and build Web pages that are more visually oriented.

The Library Versus the Web

Net Gen students clearly perceive the open space of the World Wide Web as their information universe. This is in opposition to the worldview of librarians and many faculty, who perceive the library as the locus of information relevant to academic work. Students usually approach their research without regard to the library's structure or the way that the library segments different resources into different areas of its Web site. Library Web sites often reflect an organizational view of the library (for example, how to access the reference department or online catalog); they do not do a particularly good job of aggregating content on a particular subject area. Students usually prefer the global searching of Google to more sophisticated but more time-consuming searching provided by the library, where students must make separate searches of the online catalog and every database of potential interest, after first identifying which databases might be relevant. In addition, not all searches of library catalogs or databases yield full-text materials, and Net Gen students want not just speedy answers, but full gratification of their information requests on the spot, if possible.

Recent surveys exploring college student use of the Web versus the library confirm the commonly held perception of faculty and librarians that students' primary sources of information for coursework are resources found on the Web and that most students use a search engine such as Google as their first point of entry to information rather than searching the library Web site or catalog.^{3a,b} Several campus studies also examined where students gather information for a paper or

an assignment. One study at Colorado State University yielded information that 58 percent of freshmen used Google or a comparable search engine first, while only 23 percent started with a database or index.⁴

The world of information is large and complex. There are no easy answers to providing simplified searching to the wealth of electronic information resources produced by a wide range of publishers using different structures and vocabularies. Students may perceive that librarians have developed systems that are complex and make sense to information professionals but are too difficult to use without being an expert.⁵ However, as new generations of information products are developed, producers and system developers should try to address the information-seeking habits of Net Gen students. Libraries and the global service provider OCLC are working with Google so that information from peer-reviewed journals, books, theses, and other academic resources can be accessed through the Google Scholar search service. This is a step in the right direction, taking library resources to where students want to find them.^{6a,b} Libraries also need to integrate more multimedia resources into their searchable content; this type of digital content is becoming increasingly important to Net Gen students, who may wish to study an audio recording of political speeches and incorporate segments into a term project as well as access books and journals on the topic. However, libraries typically incorporate information objects into their catalogs only when those resources are owned or licensed by the library. Is this still a relevant strategy in a world of global access to information via the Internet?

Locating Quality Digital Information

Providing mechanisms for information seekers from academe to locate quality information resources in a particular subject area is also a challenge for libraries—a very important one. Many academic libraries provide “library guides” or pathfinders to quality information resources, available through the library Web site, but typically they are not heavily used. A limited number of subject disciplines have developed coordinated Web guides to information resources; a notable example is AgNIC (<http://www.agnic.org>), serving the field of agriculture. Some libraries are developing mechanisms to link subject pathfinders into course management systems for every course at the institution. This useful strategy brings the information to the place where students will be actively engaged in academic work. Librarians at the University of Rochester looked for new ways to bring quality subject resources to the attention of students. They recognized that “undergraduate

students' mental model is one focused on courses and coursework, rather than disciplines." Therefore, they developed a mechanism to incorporate pathfinders into every course at the institution using the course management system.⁷

Both students and faculty believe that the library is doing a poor job with helping them discern which Web resources are suitable for academic work.⁸ Libraries are addressing this concern by developing portals to catalogs, licensed databases, and Web sites that would meet the kinds of criteria used in building academic library collections and by working with such projects as Google Scholar.

Incorporating Visual Cues

Designing Web pages that are responsive to Net Gen students' style would also help guide students to appropriate content or help them when they have problems with searches. A study of high school students' Web searching revealed that students relied heavily on information displayed in graphic form on Web pages and often relied on graphics and visual cues to interpret the relevance of such pages.⁹ Libraries and information service providers generally do not design their resources with such criteria in mind. Incorporating students on design teams and giving them the go-ahead to reenvision the way the library displays its resources would be a useful method of developing information that resonates better with Net Gen students.

To summarize, Net Gen access services will:

- ▶ Continue to integrate library information into Google or other popular access mechanisms
- ▶ Offer simplified and graphic ways for students to approach subject searches
- ▶ Integrate subject guides or pathfinders into CMS or other locations conducive to use
- ▶ Integrate searching of "open" Web resources and materials owned or licensed by the library

Library and Information Services

Librarians often take great pride in the personalized information services they offer to their constituencies and the classes they teach to incorporate information literacy into the academic curriculum. While many of today's Net Gen students have grown up with technology, they do not necessarily have the requisite knowledge or skills to use technology and digital information in ways appropriate to the academy. Librarians should persist in their efforts to find ways to help

students learn about digital information, including important policy issues in this arena, such as privacy and intellectual property. They should consider updating some of their methods for teaching students, incorporating gaming technology, or developing more visually oriented instruction aids, for example. One-on-one services offered electronically should be tailored to students' characteristics, such as their propensity to work late hours and use a variety of technologies, including laptops and cell phones.

Fluency with Technology and Information Literacy

Are Net Gen students already so technology literate and information savvy that they have no need for instruction or personal assistance in using technology and library and information resources? We know that Net Gen students come to campus having played hours of video games, having spent much of their spare time surfing the Net and instant messaging their friends, and having used multiple electronic devices simultaneously. On the other hand, we hear complaints from faculty that students use inappropriate sources from the Web to support their ideas in term papers instead of peer-reviewed academic resources; that they submit multimedia projects that are superficial and full of glitz, not substance¹⁰—and that they no longer read, period.

When students graduate, their faculty in graduate degree programs and their employers expect that they will have a facility with technology and with digital information that the older generations do not have. New office recruits are often hired because of their Internet skill and are given projects that exploit their technology and information skills, developed during their college years.

In addition, today's college graduates live in a world where it is important to understand key information policy issues. Intellectual property, privacy, and First Amendment issues are fundamental to operating as an informed citizen in today's information society and directly affect the work of individuals who create, as well as use, networked information.

While Net Gen students generally can multitask, learn systems without consulting manuals, and surf the Web, they lack technology and information skills appropriate for academic work. Higher education institutions do not integrate or package technology and digital information skills instruction into the mainstream curriculum.

A National Academies report described a model set of skills for “fluency in information technology,” which incorporates both information technology and

literacy skills. The report's authors divided skills into three categories: foundational concepts, contemporary skills, and intellectual capabilities. They recommended that each university's subject area curriculum develop ways to incorporate instruction in these topics; however, they lamented that this is not currently the case.¹¹ The Association of College and Research Libraries (ACRL), a division of the American Library Association, has also developed guidelines for information literacy, but they have not been widely implemented by universities.¹² Technology and information literacy are generally perceived to be "library" or "IT" problems, not overall curricular issues.

At Southwestern University, a team of IT professionals, librarians, and faculty developed a student survey based on both the National Academies' fluency with information technology principles and the ACRL Information Literacy Competency Standards. Their findings revealed that while students rated themselves highly in their ability to find information on the Internet, they recognized that they floundered when they attempted to find materials appropriate for their research and wasted much time in the process. The students also expressed a desire for more technology applications to be integrated into their courses.¹³ This model is being explored through a Mellon Foundation–sponsored project at the University of California, Berkeley, where selected faculty and librarians are working in partnership to incorporate information literacy skills and undergraduate research into large-enrollment courses with the goal of assisting students in developing skills that will serve them throughout their coursework at the institution.¹⁴

Delivering Service with Style

Information and technology literacy represents a content area in Net Gen students' education that has not been fully addressed. Separate but related is the "style" issue of how best to deliver this educational content and provide information and technology services to Net Gen students. Net Gen students work in information environments, and a very important one in college is the course management system. Libraries should develop tutorials, exercises, and guides that can readily be embedded in course materials within course management systems, and some are already doing this.^{15a,b} They can develop games to teach these skills; TILT, the Texas Information Literacy Tutorial (<http://tilt.lib.utsystem.edu/>), developed by The University of Texas at Austin libraries, is an early example. Simulations such as Environmental Detectives (<http://cms.mit.edu/games/education/Handheld/Intro.htm>) can incorporate information-seeking skills into the game, reinforcing

Net Gen students' interest in figuring things out and working in groups. Libraries should explore blogs as a mechanism for students to exchange information on valuable information resources they find for particular course assignments. Blogs sponsored by the library might be particularly effective for graduate students beginning their dissertations and needing advice from peers and information professionals on locating materials for their literature reviews.

An emerging area of literacy is the need for students to increase their fluency with representing their knowledge in the digital, multimedia world. George Lucas stated that students need to learn a "language of screens" in order to be effective communicators today.¹⁶ The Visible Knowledge Project, in which university faculty are working with multimedia content and developing assessment mechanisms to measure the effectiveness of their instruction, is also working on guidelines to assist faculty in evaluating student multimedia projects.¹⁷ While Net Gen students often prefer creating a multimedia project rather than a term paper that is entirely text, they need assistance in understanding how to represent their knowledge in a form that is appropriate for academic work, just as they need to learn to write in a way that meets the standards of the academy.

Reference Services

Although libraries have offered e-mail reference services for a number of years, they were slow to adopt chat and sometimes developed sophisticated but complex chat software rather than the simpler systems typically used by Net Gen students. Librarians might need to change their mindset of employing the most sophisticated software that enables features they believe could provide improved service, such as permitting the librarian to demonstrate a search or review an information resource in one window while chatting with the student in another, in preference for software that students are more likely to use.

In one study where a library did use standard AOL Instant Messenger software, other roadblocks to student adoption were put into place. The librarians noted in their report on the service that they did not staff it during late-night hours when students were most likely to use the service and that they did not market the service in information literacy class sessions for fear that the response might overwhelm their capabilities. Instead, the service was not heavily used.¹⁸ They did collect some responses as to why students took advantage of the service, and convenience was the main reason. One student reinforced why this type of service has appeal to the multitasking Net Gen students by replying that he had

used the service instead of phoning the library so that he could continue working and browsing while waiting for an answer from the librarian.

Visual, Interactive Services

Students also like self-service, interactive Web sites, and it is surprising that libraries haven't developed visual representations of their services that students could explore. A survey by OCLC found that one of students' top suggestions for libraries was to offer interactive maps, study tips, and guides.¹⁹ An example of that type of environment is a Web site developed by the British Museum as a "student's room" for an exhibit of Mughal, India, an ancient civilization.²⁰ Students see an office-style room that they can explore by clicking on components such as a globe, file cabinets, book shelves, and so forth. They are then led to museum resources including an atlas and primary resources from the museum's collections on the Mughal period. This type of model could be used for a library reference room and its resources.

Libraries could add value to key pages of their Web sites by including interactive tutorials on how to find information or how to judge quality information resources. Libraries could use part of their home page to highlight a "resource of the week," to better publicize information content that could likely assist students in their assignments. They could use customized mouse pads to advertise URLs for selected information resources.

Libraries also need to think about new services using mobile technology such as cell phones. They might allow students to reserve group study rooms and be alerted to availability via their cell phones, send simple text-message queries to library catalogs or databases, or check library hours via text messaging. Such services might be particularly valuable for students who live off campus.

How will we conceive and design these new services? Librarians should consult with students in the design phase of services and incorporate students on teams that make decisions about the implementation of those services. Making use of the imagination, creativity, technical skills, and perspectives of Net Gen students is the best way to ensure that new services will be responsive to both their needs and their style.

To summarize, Net Gen information services will:

- ▶ Use students on teams that design new services and environments
- ▶ Integrate services into course management systems
- ▶ Explore services for mobile devices

- ▶ Represent services and instruction visually and in multimedia modes
- ▶ Focus on partnership models
- ▶ Emphasize how to evaluate information resources
- ▶ Emphasize information policy issues

Environments

Although technology has transformed many campuses, physical spaces remain important in most higher education institutions. The library offers a venue where academic work can be carried out in a social context. As libraries renovate facilities to incorporate technology, they are also making them more suitable for student group work, informal socializing, and ubiquitous computing. Information Commons often provide space, workstations, and software that encourage both access to information and the capability to create new information products. Some Information Commons offer joint support to users from both the library and IT units. It is less common for libraries to rethink their virtual services to provide a better complement to their physically based services. Libraries have opportunities to alter their marketing strategies and their use of visual representations of information to encourage more and new creative uses of digital information resources.

Library Physical Spaces

As the Leavey Library at USC mentioned above demonstrates, students will flock to library facilities that offer environments conducive to Net Gen learners. What Leavey offers are hundreds of workstations in configurations that support both individuals and small groups, group study rooms where students can work together on projects, workstations equipped with a wide array of software that can be used for creation of new information products, and staff with both library and information technology expertise who can address subject-information requests and technology hardware or software issues.

Many academic libraries are following the Leavey Library model and are transforming part of their physical space into information commons, multimedia production areas, classrooms, or all three. For example, the University of Arizona's Learning Center has components that include a library information commons where students can work on workstations configured for individual or group work, develop multimedia projects, and get advice from reference librarians. Adjacent to the information commons are multimedia classrooms and a computer lab with support by Information Technology staff. The Indiana University informa-

tion commons, developed jointly by the library and IT and situated on the first floor of the library, incorporates single and multiuser workstation areas, group study rooms, and classrooms and offers a wide range of services supported from a circular central desk staffed by library and IT staff.

While there is no one widely accepted definition of an information commons, generally it is a physical space, not always in the library, that incorporates many workstations equipped with software supporting a variety of uses, offers workspace for individuals and groups, provides comfortable furniture, and has staff that can support activities related to access to information and use of technology to develop new products. While information commons are usually developed for student use, some incorporate centers for teaching excellence or instructional technology support services for faculty.

These new types of library spaces communicate a welcoming attitude to Net Gen students. They are the opposite of old-style formal reference rooms where students were expected to sit on straight wooden chairs and work individually and silently, without access to technology. Instead, these spaces project a comfortable, relaxed environment, a celebration of technology, and an invitation to communicate. One editor wrote, after interviewing an architect who had designed a vibrant new library at the University of Nevada Las Vegas, "...try to think of your library as an environment rather than a facility—a place of interaction, learning, and experiencing rather than a place for storage and equipment."²¹

Library physical spaces continue to be valued places for building community in colleges and universities. Importantly, they also provide an atmosphere in which social and academic interests can easily intersect. When students were asked what they desired in an upcoming renovation of Teachers College at Columbia University Library, they replied that they wanted "a social academic experience."²² Libraries can promote community by providing comfortable spaces for informal gatherings of students. Many libraries are adding coffee bars to their lobby areas or a building adjacent to the library; such spaces encourage students to continue conversations on topics of academic interest. Libraries might develop new ways of promoting community among students, related to course activity. For example, they may develop a message board or online mechanism for students to identify who else in the library building might be working on an assignment for a particular course if they need help from a peer or wish to study as a group.²³

Integrating Physical and Virtual Environments

Most libraries have not yet learned how to effectively integrate physical spaces with virtual spaces and services. For example, the introductory screen on workstations in an information commons may have no description of the services or digital information products offered there. Vassar College has remedied this in their Media Cloisters (<http://mediacloisters.vassar.edu/>), where entering visitors are confronted with a brightly colored set of screens introducing student members of the multimedia team and advertising their areas of expertise.

How might libraries market services to Net Gen students, who are often visual learners? One possibility is to literally project information onto the walls of the information commons. In a changing display, libraries could develop programs to project pages of electronic journals, guides to subject fields or topics that many students are working on during a specific week, quality Web sites with good visual displays (for example, museum Web sites), and student or faculty multimedia information products. Such displays would alert students to the broad array of electronic information resources accessible through the library and could prompt student interaction with a reference librarian to pursue similar sources for their projects.

To summarize, Net Gen information environments will:

- ▶ Provide individual and group learning spaces
- ▶ Support access to and creation of information resources
- ▶ Offer staff and faculty development and training
- ▶ Provide staff with a range of technology and information skills
- ▶ Effectively market services to all groups of potential users
- ▶ Integrate physical spaces and services with virtual spaces and services
- ▶ Build community

Conclusion

Developing library content, services, and environments that are responsive to Net Gen students can be achieved by examining the characteristics of those students and making a conscious effort to address deficiencies and transform the current situation in libraries. Why should libraries and librarians adapt their well-structured organizations and systems to the needs of students rather than insist that students learn about and adapt to existing library systems? The answer is that students have grown up in and will live in a society rich in technology and

digital information. By blending the technology skills and mindset that students have developed all their lives with the fruits of the academy, libraries can offer environments that resonate with Net Gen students while enriching their college education and lifelong learning capabilities.

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About the Author

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