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Library Trends, a quarterly thematic journal, focuses on current trends in all areas of library practice. Each issue addresses a single theme in-depth, exploring topics of interest primarily to practicing librarians and information scientists and secondarily to educators and students.

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Library Trends is published four times annually—in summer, fall, winter, and spring—by the Graduate School of Library and Information Science at the University of Illinois, Urbana-Champaign, 501 E. Daniel Street, Champaign, IL 61820-6211.

Subscriptions: Institutional rate is $75 per volume (plus $7 for overseas subscribers). Subscriptions for an individual are $50 (plus $7 for overseas subscribers). Registered students may subscribe for $25 (plus $7 for overseas subscribers). Individual issues are $18.50 for the current volume year; back issues other than those from the present volume year are $10. Claims for missing numbers should be made within six months following the date of publication. All foreign subscriptions and orders must be accompanied by payment.

Address orders to: University of Illinois Press, Journals Department, 1325 S. Oak Street, Champaign, IL 61820. For out-of-print issues, contact University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106. Postmaster: Send change of address to University of Illinois Press, 1825 S. Oak Street, Champaign, IL 61820.

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Second class postage paid at Champaign, Illinois

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This journal is abstracted or indexed in Current Contents, Current Index to Journals in Education, Information Science Abstracts, Library Literature, PAIS, and Social Sciences Citation Index.

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The Library and Undergraduate Education

T. G. McFadden
T. J. Hostetler
Issue Editors

University of Illinois
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The Library and Undergraduate Education

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Introduction

THOMAS G. McFADDEN AND THEODORE J. HOSTETLER

IN RECENT YEARS, HIGHER EDUCATION and, in particular, undergraduate teaching, has been the subject of intensive, and often hostile, scrutiny by critics of all kinds: journalists, professors, legislators, parents, and even students. A college education today, argue these observers, costs more and delivers less than at any time in recent memory. Undergraduates are ill-prepared to study, think, and work when they enter college or the university, and the resulting educational experience does not seem to make much of an impression on them. Johnny (and Mary) still can't read, write, think, or even pay attention. One popular commentator on this scene concludes that the modern university is:

distinguished by costs that are zooming out of control; curriculums that look like they were designed by a game show host; nonexistent advising programs; lectures of droning, mind-numbing dullness often to 1,000 or more semi-anonymous undergraduates herded into dilapidated, ill-lighted lecture halls; teaching assistants who can't speak understandable English; and the product of this all, a generation of expensively credentialed college graduates who might not be able to locate England on a map. (Sykes, 1988, p. 4)

With varying degrees of balance and politeness, other writers tell the same tale.

Leaving aside the political controversies surrounding this debate, most critics agree on at least one piece of the puzzle: the retreat of the professoriate from teaching. In his influential Carnegie Foundation report on
the issues, Boyer (1990) remarked that, in just a few decades, priorities in American higher education have become significantly realigned. The focus at many of the nation's colleges and universities has shifted from undergraduate education to the professoriate, from general to specialized education, and from loyalty to the campus to loyalty to the profession (p. 13).^3

Have college and university libraries managed to escape this realignment? Do we remain closely and personally involved with undergraduates and their problems, or have we withdrawn to other concerns and clients, leaving these students to shift for themselves? In other words, are college and university librarians guilty of flight from the reference desk? It is the belief and experience of the editors of this issue of Library Trends that this has often been the case, both in practice and in theory, in many academic libraries. Perhaps this is why the library has ceased to be a factor in the academic lives of many undergraduates, whatever our attitudes and strategies might be otherwise. Thus Boyer (1987), in his earlier work for the Carnegie Foundation on college life, found that the library is viewed by most undergraduates as simply a quiet place to study (pp. 160-61).

How then to bring undergraduates, faculty, and the library back together as part of a common educational and intellectual effort? Or, as Branscomb (1940) queried a half-century ago: "[S]hould the library play a fundamentally more important role in undergraduate education than it does in most institutions, and if so, what is that role" (p. 55)? This, in effect, was the question put to the contributors to this issue of Library Trends. Their responses, consistently thoughtful and imaginative, reveal a core of themes and concerns which any answer to this question must accommodate.

One such thread, appearing in various guises in the essays by Engle, Farber, Gowler, Hardesty, and Kohl is that of the library itself as an educative institution. This is what Branscomb (1940) meant when he remarked that the library could no longer remain a collateral adjunct to the main business of the college or university but must be regarded as having an educational program and role of its own (pp. 8-10). It is not too much to think of the library as a teacher, instructive by virtue of its physical and conceptual organization, by the arrangement of resources and materials, and by the way in which physical and intellectual resources interact with one another. This is partly what Kohl means when he suggests that a library should be organized in such a way that independent use is possible; it is what Hardesty is describing in the essential and full partnership between classroom faculty and librarians in the educational enterprise, and it is what Gowler intends when he characterizes a library, its users, and its resources—taken all together—as a community of learners. ^6 Understood in this way, as Kohl points out, the totality of a library's
programs and services can be viewed as a curriculum. If this is true, then there are clear implications for the library's role in the institutional definition and assessment of educational outcomes.

If the library is itself an educative institution, and therefore at once a part of the teaching enterprise yet distinct from the classroom, how does this happen? It seems clear that the sense in which a library can be instructive is broader than the traditional understanding of bibliographic instruction. Nevertheless, most college or university libraries still devote substantial time and resources to teaching in this sense—i.e., orientation tours, introductory classes, term paper workshops, OPAC instruction, in-class presentations, and library research classes. The justification often provided for much of this effort is that it will be repaid by creating empowered library users—students and faculty capable of functioning independently (for most purposes) in the library. The question of the self-sufficient user, and in general the purpose and future of bibliographic instruction programs, is addressed in various ways in this issue of Library Trends by Engle, Farber, Hardesty, Kohl, Meltzer et al., and Tiefel.

Kohl argues that the primary public service goal of academic libraries must be to educate independent library users. Moreover, he suggests, the standard organization and administration of bibliographic instruction must change in important ways before this goal can be realized. But what then of Farber's teachable moment? For Farber, it is fair to say, the crux of bibliographic instruction (however it occurs) is the encounter between a trained mind and an untrained mind on a matter of specific intellectual concern for both. The resulting synergy produces a particular kind of enlightenment for (at least) the student: a clarification of concepts, a sharper understanding of distinctions, a more or less well-defined strategy for proceeding with the investigation, and some appreciation of the relevant information resources available. This is the essence of what Blandy and Libuti name the "apprentice-journeyman-master" relationship in their article. The problem with the trend toward what Farber calls "disintermediation" is that the teachable moment may occur at any time in the student's pursuit and in quite unexpected ways and contexts. In fact, recognizing when the moment has occurred is as much a part of public service as the actual reference process that follows. Reference-by-appointment, especially for undergraduates, may not be the most appropriate response to this need.

The question of the role and future of library user education leads directly to a cluster of issues and problems treated by nearly all of the contributors to this issue of Library Trends: literacy, critical thinking, reading, and technology. The question of how and when any particular kind of library service is most appropriate depends very much on the intellectual and conceptual abilities, and associated background knowledge (if any), that our students bring with them to the library and their
assignments. Moreover, the rapid proliferation of a variety of complex and sophisticated electronic information retrieval resources (including, perhaps most especially, OPACs) in most college and university libraries raises important questions about the intelligibility and utility of these resources for many undergraduates. What kind of intellectual, conceptual, and educational framework does the typical undergraduate bring to the library within which to interpret and understand these sophisticated information resources? The answer is obvious to anyone who works daily with this cohort. The concepts of evidence, of authority, of reasoned thought and narrative—and of how these are exemplified in the resources of a library and can be intellectually exploited—are all quite foreign to a very substantial number of undergraduates. In fact, higher-order conceptual skills of any kind are uncommon for many of our students. Botstein (1990) has called this "damaged literacy." He explains: "The actual command of the spoken and written word is insufficient to grasp, much less command, the realities in which we live. Even the literacy that permits the privileged in our society to graduate from high school and college is too compromised in these terms to be called a high order of literacy" (p. 57).

Ignorance has proved to be more stubborn than anyone expected. To this extent, undergraduates come to the library ill-prepared not merely for the relatively prosaic task of using, say, printed indexes and reference books, but even to think clearly about what they are doing at all.9

This unhappy situation brings into sharp focus the connections among reading, literacy, and critical thinking which occupy several contributors, most notably Blandy and Libutti, Deekle, Engle, Gowler, Hubbard, and MacAdam. The issues are complex: What is the role of reading print texts in constructing advanced literacy? What is the role of electronic media in promoting or hindering the development of analytical skills? How can the library encourage reading and literacy and hence the acquisition of higher-level conceptual skills? More generally, what is the contribution of the library in providing a liberal education to undergraduates?210

The critical thinking (CT) movement in American education is not a new idea. Many of the characteristics of CT that appear in definitions of the process sound rather like what the Yale reports of 1828 described as the discipline of the mind (as distinguished from the furniture of the mind).11 This theme, that CT is a certain habit of mind and that this habit of mind is distinct from, but closely related to, that which is thought about, recurs in virtually every contemporary discussion of CT and how it is to be taught in the classroom (if, indeed, it can be taught at all).12 What is new to the modern discussion is the controversy surrounding the contribution that the print culture uniquely makes to critical thinking and literacy—and the harm that electronic formats may, or may not, cause to the development of critical thinking and literacy. These questions are explored here chiefly by Deekle and MacAdam and in related ways by Engle and Hubbard.
Depending on the generation and predisposition of the critic, the villain in this drama may variously be television, video games, computers, multimedia, or the Internet. Hypertext has been called the information technology of the decade. Certain Internet access programs, such as the World Wide Web and Mosaic, are being touted by many as the killer applications in this environment, as the hypertextualization of the Internet. Gorman (1994) has named these enthusiasts technovandals. He illustrates their point of view in a passage from a California State University planning document:

learners increasingly can be free to determine their own learning paths divorced from the sequential, linear, directed flow of printed text, or the weight of authority. Responsibility for collecting, organizing, and analyzing information can be shifted from the provider to the end user. In the learning environment which is student centered and controlled, learning becomes less structured and more associative, intuitive, dynamic, and potentially more creative. (p. 21)

Gorman comments, with evident sadness, on this vision:

I read these words on the 37th anniversary of the day that I first worked in a library. They did more to illuminate the thinking and motives of those who are dedicated to destroying academic libraries than anything I have ever heard or read. Students, teachers, and all those interested in education and learning would do well to heed their warning and understand their implications for education and society. These are people to whom the sustained reading of linear texts—the culture of the book—is anathema. (p. 21)

This is not merely the disgruntled perspective of a retrograde humanist. Gelernter (1994), professor of computer science at Yale University, contends that, in practice, computers make our worst educational nightmares come true:

While we bemoan the decline of literacy, computers discount words in favor of pictures and pictures in favor of video. While we fret about the decreasing cogency of public debate, computers dismiss linear argument and promote fast, shallow romps across the information landscape. Hypermedia, multimedia's comrade in the struggle for a brave new classroom, is just as troubling. It's a way of presenting documents on screen without imposing a linear start-to-finish order. This is another cute idea that is good in minor ways and terrible in major ones. Teaching children to understand the orderly unfolding of a plot or a logical argument is a crucial part of education. Authors don't merely agglomerate paragraphs; they work hard to make the narrative read a certain way, prove a particular point. Dynamiting documents into disjointed paragraphs is one more expression of the sorry fact that sustained argument is not our style. Logical presentation be damned. (p. 14)
Thus the argument is joined. It takes us directly to the set of issues surrounding electronic publishing, the use of the Internet by undergraduates, and the role of libraries in this interplay. From differing perspectives, Deekle, Engle, Farber, Pask, and Tiefel contribute importantly to this discussion.

During the past several years, the editors have attended a number of workshops and conferences on the Internet and on teaching the use of the Internet to faculty and students. Almost without exception, the speakers (mostly librarians) at these conferences accept the twin dogmas that the Internet is the new literacy, the wave of the scholarly publishing future, and that faculty and students can now use the Internet to bring into the home, office, or classroom a vast array of valuable information and scholarly resources. Indeed, introducing researchers to the Internet has become a kind of moral imperative for many academic librarians who apparently believe the ordinary world of print publishing to be a rapidly fading anachronism.

On the street, one can hear the Internet called datatragash. It has been described as a toxic waste dump, a fairy tale, and as a haystack (of needle fame). Ted Nelson was quoted in *Atlantic Monthly* to the effect that the so-called information age is really the age of information lost (Max, 1994, p. 71). In the same article, Updike offered the opinion that fiction on the Internet is mostly roadkill anyway (p. 67). What's going on here?

The little boy who revealed the emperor to be without clothes did not necessarily mean to suggest that the unfortunate monarch was deserving of no respect whatsoever. Just so, it is not our intention to malign the Internet as of no value at all to librarians or their customers. But we believe that our colleagues often expect too much of it and similar electronic resources, and that they transfer this optimism to our students without due regard for the problems and road hazards. Many of us encourage a faith that frequently is unfounded and divert many library patrons from more appropriate (often, although not always, print) resources.

The first thing we need to realize is that the Internet is not a thing. It is, at its most basic, merely an electronic communications network. To speak of using the Internet to find this or that piece of information, or to locate a specific source of information, is to treat the Internet as though it were a single and coherent compendium. But all of the techniques that are common to Internet access in nearly every electronic environment are rather more like the light switch in the reading room of a library than they are like a guide to the collection of items contained in that room; the illumination is still only of an undifferentiated lump. In particular, no systematic or global strategy for locating information and information sources will as yet yield useful results on the Internet. No useful filtering or discriminating mechanism has yet been developed for
searching across the Internet that will sift out irrelevant or unreliable information while leaving the most relevant resources unscathed. In other words, no serious indexing exists for the Internet and is not likely to exist in the near future. "Telling average public library patrons or average undergraduate students that they can traverse the Web to find a good WAIS server that may help them locate the information they really need," caustically observe Crawford and Gorman (1995), "is basically telling them to go to hell" (p. 128).

The temptation is to suppose that, because the Internet is already in machine-readable form, indexing the Internet need involve nothing more than asking a machine to read it. This is a frequent theme in discussions of this problem, both on and off the Internet itself. In fact, when online library catalogs first became common, the suggestion was often heard that traditional cataloging practices (assignment of subject headings, for instance) would no longer be necessary; keyword searching was the answer to our prayers for fast and efficient subject searching. One occasionally still encounters this foolish idea, even within the profession. The assumption is, we know, quite false. There is a reason that the makers of large and complex commercial databases invest substantial sums of money in indexing and vocabulary control to provide effective access to their data files. It is entirely obvious that intellectual indexing, vocabulary control, and structured search techniques are even more important in electronic data files than in printed files, precisely because of the great size of the databases and the genuinely remarkable power of the searching algorithms. But neither is this just or merely a search engine problem. A search and retrieval device or mechanism is only as good as that upon which it is asked to operate.

One of the inflated claims made by Internet hucksters is that the network now makes possible direct access to the collections of very many of the world’s great libraries. We now have, they like to say, the culture of the entire planet at our fingertips: the libraries, the museums, the archives, the galleries; you name it, it’s on the Net.

Roszak (1994) remarks drily that we have a name for visions like this: we call them fairy tales (p. 186). Never mind that many cyberspace explorers fail to understand that what they will get when they access a library OPAC is only the library’s online catalog and rarely the books and journals themselves. But suppose that a student (or faculty member) at home really just does want merely to search the catalogs of some Internet libraries. What are the obstacles? For the unaware, that is, most of our students, the problems add up to a nightmare.

Our hapless wanderer, for example, discovers that merely getting into, and then out of, a catalog may not be all that straightforward; in fact, escape may turn out to be impossible. She learns, probably without realizing it, that how—and if—a library has implemented authority control
will substantially alter search results from one catalog to the next. She learns, also probably without realizing it, that decisions individual libraries make about the character of keyword and subject searches—what fields and subfields, for instance, are included in each and how they are combined—will similarly affect cross-catalog searching in unpredictable and significant ways. Why don’t more catalogs, for instance, include their authority records in keyword searching?

Brand name shopping may not, she finds, yield the same quality at every supermarket. One library’s version of a given OPAC search engine may differ significantly from that of another. Decisions about how to configure any particular search type, about which fields to include in each search strategy, and about subject and name authorities will dramatically affect the results of what appears to be the same search for an inquirer moving across catalogs, even though the catalog vendor is the same at each site. Almost never do the catalog interface and help screens reveal this crucial information. In fact, just the variety of help structures is astounding and usually disappointing.

It seems to us undeniable that the Internet contains a few information and scholarly gems but mostly dross. And mining the ore is uncertain at best, impossible at worst, and costly in any case. The Internet has been oversold as the next generation in scholarly communication and academic publishing.

**CONCLUSION**

*The Role of the Library*

A question implicit in most of the articles in this *Library Trends* issue, but tackled directly by Deekle, Gowler, Hubbard, and MacAdam, is this: What, in the postmodern world, constitutes a liberal education? And, more particularly, what does the college or university library have to do with the answer to this question?

Gowler takes a step toward an answer in his characterization of the library and its patrons as a community of learners. Some of the participants in this conversation are represented only in their books. Others teach with, through, and even contra the books; still others learn and question from both the living and the dead. It is a certain kind of involvement in this discussion, suggests Gowler, that is at the heart of a liberal education. The question of the canon, addressed in quite different ways by Gowler and Hubbard, is intimately linked to the question of what is the proper content of general education (at any level). Are some books simply better than others? And if they are, which books exactly are they? Who should read them and when? An unbroken circle brings us back to our question: What is the contribution of the library in providing a liberal education to undergraduates?
The public vocabulary of higher education is rapidly being overtaken by the language of the marketplace. Undergraduate education, and the undergraduate degree, are increasingly characterized in terms of "outcomes," "outputs," "value-added," and "productivity." Students are now "customers," "consumers," and "inputs." Governing bodies increasingly insist upon "assessment," "measurement," and "accountability." There is good reason to believe that legislators will not hesitate to use their funding authority to reward, or punish, public colleges and universities as a function of higher education's response to the concerns of voters. Education is, for middle America, an enormous public investment; it is no surprise that a respectable economic return on that investment is high on the list of priorities for many voters (Smith, 1995). What has been gently described as "performance-based funding" is capturing the attention of many state governments (Ashworth, 1994). One result has been renewed interest in the nature, content, value, and marketability of the baccalaureate degree—which is to say, most often, in the outcomes of general education.

In this process of definition and redefinition, an academic library should not accept merely the traditional supporting role. If we are to take seriously the idea that the academic library's programs and services make up a proper and legitimate curriculum, then we cannot escape the obvious conclusion that the library, like the parent institution, is fully accountable for its educational performance. Librarians are in the education business, argues Kieft (1995), and not the information business:

Thus, librarians' business as educators is, in its largest sense, the growth of souls and the finishing of spirits, which means that librarians, like all teachers, must engage in nurturing students to create themselves as knowledgeable human beings by passing along to them the authority not only of their knowledge but of their experience of themselves as knowledgeable beings. (pp. 17-18)

The contributors to this issue of Library Trends would find little here with which to disagree. It is clear that, for these authors, the essential character of undergraduate librarianship is intellectual engagement: engagement with students, with faculty, and with the complex nexus of ideas, processes, information, and scholarship that is being created and shaped by emerging technologies. Librarians are uniquely placed to observe, understand, and participate in the interaction of these elements of the learning situation. It is critically important, therefore, that we bring these concerns and this understanding into the debates and decisions surrounding broad educational issues.

The Role of Librarians

What practical steps can college and university librarians take to become more a part of the undergraduate educational mission? Kieft (1995) offers a number of valuable suggestions as do several of the contributors to this Library Trends issue. Other useful strategies include:
Know and understand the organization of undergraduate instruction on your campus. Identify the key institutional committees and working groups (charged, for instance, to oversee the curriculum, the general education component, degree requirements, and other aspects of the academic program) and lobby for librarian membership in these bodies. Participate actively in honors or freshman-year experience initiatives and use the opportunity to become involved with student services as well as academic affairs programming.

Become familiar with the political climate in your state or region as it affects higher education; in particular, find out what (if any) assessment measures are being used or considered by your legislature and/or governing body to evaluate institutional performance and student outcomes. Get the library involved in the response to these measures and take a leadership role in defining the information competency part of this assessment activity (see the Rader contribution to this Library Trends issue for an example).

Read routinely the higher education literature that deals with these matters; in particular, follow the key journals in undergraduate and general education, including at least: Liberal Education (Association of American Colleges), Change (American Association for Higher Education), Academe (American Association of University Professors), and The Journal of General Education. Many of the most important pedagogical and philosophical issues of undergraduate education are rarely, if ever, discussed in the professional library literature.

It is often said that the problem of undergraduate reading is not really what these students read, but that they don’t read much of anything at all. Many college and university libraries no longer take seriously the reader’s advisor function, including making available general reading collections and rooms. The required reading list for first-year students is rapidly going the way of the core curriculum. Librarians can play a crucial role in turning this situation around by sponsoring “unofficial” reading programs (over the summer or during the school year), by creating and publishing more formal reading lists featuring, for instance, faculty favorites, by organizing book exhibits aimed at undergraduates, and by restoring to the library space a general reading room or browsing collection. The University of California at Berkeley, for example, has created a World Wide Web page devoted to recommended summer reading for incoming freshmen.22

Finally, become informed about the controversies and conflicts surrounding the definition of the postmodern university (Pratt, 1994). Try at least to untangle the labyrinth which is cultural pluralism, cultural relativism, multiculturalism, deconstructionism, and postmodernism. Find out who is thinking what on your campus about
the literary canon, the question of scientific neutrality, and the aims of education in postwar society. Engage these people in conversation and controversy, and invite them to talk with you and your colleagues. Sponsor speaking programs and seminars on these and related issues.

If futurist Rifkin (1995) is right, librarians have no future in this world (p. 158). But if this is truly the decade of the undergraduate in higher education (Boyer, 1990, p. xi), then the contributions to this issue of Library Trends are a powerful and persuasive argument that librarians and their work will be critically important for the success of this enterprise, not merely for the workforce but also for intelligent and responsible citizenship.

Acknowledgment

The authors wish to thank Susan G. Blandy for helpful comments on an earlier version of this introduction.

Notes

1 Thus Copperman's (1978) provocative claim that for "the first time in the history of our country, the educational skills of one generation will not surpass, will not equal, will not even approach, those of their parents" (quoted in National Commission on Excellence in Education, 1983, p. 11). For an assessment of Copperman's evidence for this conclusion, see Kaestle et al. (1991).

2 The most virulent critics of higher education in recent years have been conservative journalists. The best known of these, and most widely denounced, are Kimball (1990), Sykes (1988), and D'Souza (1991). Similar charges, however, have come from within the academy. Most of these insider criticisms are less sensational than the journalistic attacks, but are frequently no less harsh. See, for instance: Anderson (1992), Douglas (1992), and Huber (1992). Expressing similar concerns, but from a more liberal perspective, are: Bromwich (1992), Damrosch (1995), Getman (1992), and Smith (1990).

3 This is not a new complaint; Upton Sinclair (1922) remarked upon it in his muckraking survey of higher education (p. 144).

4 This is certainly one way to understand the attitude expressed in a recent article on reference services in the electronic library by Mardikian and Kesselman (1995). Professional librarians, they argue, need to be released from routine reference activities so that they can concentrate on in-depth research assistance and instruction to faculty and students; low-level questions can be answered by a combination of trained staff and computerized tools of various kinds. One might plausibly argue that this kind of tiered reference service is roughly analogous to the common practice in the academy of assigning many lower-division courses to graduate and teaching assistants. Instructive in this connection is the exchange of views on reference service in the January 1995 issue of The Journal of Academic Librarianship.

5 That what happens in the classroom is an undergraduate's only important educational experience has been called one of the myths of undergraduate education (Terenzini & Pascarella, 1994, pp. 31-32). Hutchins had, in 1936, called this dogma a "modern heresy" (Hutchins, 1936, pp. 68-69).

6 The idea that libraries should be thought of as independent educative institutions, similar in this way to museums and galleries, is part of what Cremin (1990) described as one of the grand stories about the educational process that emerged in the early 1970s. On this view, in part, the burden of instruction and education cannot reasonably be carried solely by classroom-based institutions, if for no other reason than this.
piece of the educational process for adolescents and adults is severely limited in space and time (pp. 25-29). Compare also the policy documents to which Cremin refers, and especially: the National Commission on the Reform of Secondary Education (1973) and the Carnegie Commission on Higher Education (1974). This theme has been more recently developed by Boyer (1991) and the National Task Force on Scholarship and the Public Humanities (1990), who describe libraries as "learning stations and parallel schools" (from Cheney, 1988). Birdsall (1994) provides an extended, and often fascinating, discussion of the implications of the library as place. Meyrowitz (1985) provides a broader sociological analysis of the concepts of place and community in an electronic environment.

A large user survey recently conducted at one of the editors’ institutions revealed that, of 400 students asked, nearly all suggested that individual assistance would be the most valuable service the library could offer; some 80 percent of faculty asked a similar question responded that librarians working individually with students would contribute most to students’ ability to use the library. These results suggest that undergraduates would rather encounter the traditional reference model when they need help; instructional activities as such, contrasted with tutorial assistance at point of need and time of use, do not appear popular at all.

We regard the expressions "computer literacy" and "information literacy" as unfortunate linguistic barbarisms. Nevertheless, Kwasnik (1990) provides an excellent analysis of the concepts of literacy and information literacy, and of what it means to be "illiterate" in either context. Lyman (1995) provides an exploration of the tensions between computer literacy and liberal education: "Mass communication and information technology," he argues, "are texts for the critical mind, different from, but not the opposite of print" (p. 15). The task of liberal education, Lyman suggests, is to enable citizens to make reasonable judgments about the authority of information in the everyday world. For a general survey of the issues, see Moulakis (1994).

The numbers are depressing. What they add up to, in the words of the Department of Education’s 1993 National Excellence report, is that only a small percentage of students are prepared for college-level work as measured by tests that are not very exacting or difficult (p. 12). Compare also U. S. Department of Education (1986, 1990, 1993) and publications of the National Adult Literacy Survey, the National Assessment of Educational Goals, and the National Assessment of Educational Progress. The most comprehensive and balanced study of literacy in the United States is Kaestle et al. (1991). Whether the facts describe "decline" or merely "stagnation" is an open question (see Kaestle, 1995).

We do not shrink from using the expression "liberal education," despite the knocking about the concept has received in recent years. We acknowledge the late Commissioner of Baseball’s distinction in this context between studia humanitatis and studia liberalia, and accept his commentary on these matters to be an adequate basic account of the nature of a liberal education (Giamatti, 1990). This is not quite the same concept as "general education," an expression more common these days (for an account of the contemporary general education scene, see Gaff, 1983; for a history of the decline and fall, refer to Rudolph, 1977).

See the MacAdam article in this issue of Library Trends and, for instance, Paul (1993). The Yale reports are reprinted frequently in documentary histories of American education, as in: Willis (1993), pp. 27-37). The term "discipline" as used by the authors of the Yale manifesto can be, and has been, variously interpreted. But there can be no mistake that one part of the meaning is what we would call the modern critical habit of thought (compare Kimball 1995). What nearly all definitions of critical thinking have in common is that the critical habit of mind is, essentially, reflectively inferential. Blandy and Libutti, in their contribution to this Library Trends issue, explore the complex relationships among levels of scholarship, thought, analysis, and critical thinking as undergraduates move from the status of novice to veteran and back again.

See, for example, McPeck (1990) and Meyers (1986). For an assessment of how disposed toward CT most college freshmen are, see Facione, Sanchez, Facione, and Gainen (1995). Jones (1995) attempts to identify the key elements of the concept for assessment purposes.
This theme is elaborated in Crawford and Gorman (1995).

For a criticism of recent efforts to develop hypermedia software ("Faust-in-a-box") in the humanities, see Rosen (1995). The problem, suggests Rosen, is not so much the medium as the intellectual passivity students today bring to whatever they are reading, whether words on a page or a screen. Talbott (1995) develops in some detail this theme of electronic fragmentation: of mind, of self, and of community.

Postman is famous (or notorious) for this kind of complaint; see Postman (1985, 1992). More recent critics of the same mind are Birkerts (1994) and Sanders (1994). An alternative view is offered in Lanham (1993). Interestingly, Stoll (1995) argues that computers are too linear, logical, analytical, and constraining, and as a result punish the imaginative and the inventive (pp. 45-46). Marc (1995) is critical of Postman's particular point of view, but is nevertheless realistic about the effects (positive as well as negative) of television on literacy.

The entire Winter 1993 issue of *Liberal Education* was devoted to the future of the book in an electronic age (see especially Deekle, 1993). As a result, notes Magier of Columbia University, the Internet "may never come close to realizing its academic potential" (Jacobson, 1995, p. A29). Magier's picture of the Internet is vaguely reminiscent of Borges's "Library of Babel."

Compare this with the astonishing claim made by the authors of a recent article on outmoded reference services:

> The development of gopher menus and World Wide Web hypertext links, and continuing development of intelligent retrieval ala knowbots, to facilitate access to information expands the user base beyond the confines of a library building and destroys completely the reference role as mediator. (Ewing & Hauptman, 1995, p. 4)

Moderately intelligent high-school students, according to these optimistic observers, can now use almost any CD-ROM product successfully—where success is apparently defined merely as the discovery of "usable information," without regard to a librarian's opinion on the matter or guidance in the search. It is significant that the classroom instructor would not be assigned this role of redundant bystander in the educational process.

Some observers are finally beginning to notice that the relative lack of scholarly content on the Internet is, as Shreeves (1994) has suggested, a serious impediment to the use of electronic resources (p. 137). Indeed, until fairly recently, most electronic publishing on the Internet failed to pass the So What? test. That is, much of it was not of sufficient scholarly importance or interest to warrant the effort of trying to identify and control it. While this situation is beginning to change, it remains entirely unclear that scholars and researchers will rush to publish their findings on the Internet as an alternative to traditional print forms. For a brief survey of some of the issues, see McFadden (1994).

One can learn much from Baker's (1994) article in *The New Yorker*—a great deal more, in fact, than most librarian critics of the piece understood or were willing to admit. In particular, Baker reveals an intelligent and informed awareness of just what happens when a searcher goes shopping on the Internet across a variety of library catalogs and databases.

The question of the value of the humanities has often been conflated with the Great Books issue; they are, in fact, rather different. But it would be difficult to find a more clear and concise statement of the importance of joining the two in a program of general education (especially adult education) than in a work to which Gowler refers: Hutchins (1952). It is not entirely clear that Hutchins actually wrote this book as it was published (as the first volume of the Great Books of the Western World set), but it accurately represents his views about general education, views shared generally by his friends and collaborators on this project. Compare Van Doren (1948), Adler (many works), and Erskine (1928). The Great Books set, largely Adler's child, was almost immediately condemned by critics as an elitist attempt at canon fixing. Despite Hutchins's efforts, the Great Books curriculum was never adopted at Chicago; that distinction went to St. John's College. The library-as-conversation model has been interestingly developed by Bechtel (1986) and Sauer (1995).
As of this writing, the address is: http://www.lib.berkeley.edu/TeachingLib/SummerReading.html. One of the site authors is Ellen Meltzer, also a contributor to this issue of Library Trends.

Ironically because, in Rifkin's view, the post-industrial marketplace is rapidly being overtaken by the Information Age. Just exactly how automated information will be intelligently created, managed, retrieved, and interpreted in this marketplace is not entirely clear.

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Sustaining the Culture of the Book: The Role of Enrichment Reading and Critical Thinking in the Undergraduate Curriculum

BARBARA MACADAM

ABSTRACT
Over the last decade, the educational community has focused on the importance of developing reasoning and analytic skills in the learner at all levels, with a particular emphasis on a critical thinking curriculum for postsecondary students. The role of language—whether speaking, reading, or writing—may be virtually inseparable from the development of higher order reasoning ability. Academic libraries have served not only as traditional repositories of written knowledge but also increasingly as essential partners in undergraduate education. Bibliographic instruction itself has emphasized the importance of curriculum integration and the incorporation of critical thinking in teaching. Simultaneously, most academic libraries evidence a belief in the role of libraries in promoting and encouraging student reading. As part of a culture moving increasingly from a print to image and electronic forms of communication, libraries need to reexamine their role and explore what sustaining the "culture," if not the form, of the book might mean.

INTRODUCTION
Provoked by a number of sweeping indictments of the state of education in this country, the higher education community began a major reassessment of the goals, quality, and curriculum of undergraduate education. Publications such as A Nation at Risk (1983) and Boyer's (1987) College: The Undergraduate Experience in America, decried the decline in student motivation, in standardized test scores, in any interest in reading, in the ability to reason qualitatively and quantitatively, and in the capacity to
think critically. The ensuing reevaluation was soon accompanied by a growing commitment among educators to establish a core curriculum at the college level. Curricular reform included a particular emphasis on writing, information handling, and reasoning skills across the curriculum, as well as a recommitment to develop independent, self-motivated, lifelong learners.

At the same time, fueled by changing demographics of the student population, debate over the canon and what actually should constitute a core or general curriculum at the college level rocked college and university campuses. A radically transformed knowledge and information infrastructure awaited students, most of whom had spent more time watching television than reading and had grown up synthesizing information from image and sound bytes rather than complex rhetorical analysis. Among all the controversy, analysis, and redirection surrounding the undergraduate curriculum in the 1980s, critical thinking is one of the most significant elements.

**Critical Thinking and the Undergraduate Curriculum**

"Humans are the only animals whose thinking can be characterized as clear, precise, accurate, relevant, consistent, profound, and fair; they are also the only animals whose thinking is often imprecise, vague, inaccurate, irrelevant, superficial, trivial, and biased" (Paul, 1992, p. 3). Noting the inherent paradox in human nature, Paul describes the necessity for humans to think critically and not simply trust their instincts:

They should not unquestioningly believe what spontaneously occurs to them. They should not accept as true everything that is taught as true. They should not assume that their experience is unbiased. They need to formulate, since they are not born with, intellectually sound standards for belief, truth, and validity. They need to cultivate habits and traits that integrate these standards into their lives. (p. 3)

He goes on to warn that few students understand what it means to think analytically through the content of a subject; few use critical thinking as a tool for acquiring knowledge.

An explicit definition and statement of curriculum-related critical thinking skills comes from Chancellor Glenn Dumke's (1980) *Executive Order 338* announcing the requirement of formal instruction in critical thinking throughout the nineteen California State University campuses:

Instruction in critical thinking is to be designed to achieve an understanding of the ability to analyze, criticize, and advocate ideas, to reason inductively and deductively, and to reach factual or judgmental conclusions based on sound inferences drawn from unambiguous statements of knowledge or belief. The minimal competence to be expected at the successful conclusion of instruction in critical
thinking should be the ability to distinguish fact from judgment, belief from knowledge, and skills in elementary inductive and deductive process, including an understanding of the formal and informal fallacies of language and thought.

One of the most frequently cited factors in the failure of American education is the inability of American students to read and think critically. The National Commission on Excellence in Education reported alarmingly that "many 17 year olds do not possess the 'higher order' intellectual skills we should expect of them . . . . Nearly 40 percent cannot draw inferences from written materials; and only one-fifth can write a persuasive essay" (A Nation at Risk, 1983, p. 9) and recommends that all subject-matter areas contribute in developing critical-thinking skills. Chaffee (1985) defines critical thinking as "making sense of our world by carefully examining our thinking and the thinking of others in order to clarify and improve our understanding" (p. 51). Critical thinkers carefully analyze situations, issues, and messages, checking for logical and supported arguments. Critical thinkers are not swayed by clever communicators who appeal to one's emotions or sense of patriotism nor are they influenced by messages without adequate supporting evidence or by arguments loaded with faulty reasoning (Postman & Weingartner, 1969; Sacco, 1987). Additional aspects of critical thinking include cultivating a healthy skepticism, encouraging students to challenge in positive and well-reasoned ways what they read or hear, and helping students understand how writers purposefully manipulate language (Sacco, 1987). The ability to think critically is one of the most crucial survival skills in today's world. Lacking such skills, people cannot participate effectively in a democratic society (Toulmin et al., 1979; Sacco, 1987).

Clarke and Biddle (1993) argue the increasing importance of knowing how to use information to discover further information or to solve problems in an age where access to knowledge is both general and immediate. Echoing a theme common to most analysis on the need for critical thinking, they question how any of us can find what we need to know, make sense of the expanding pool of knowledge in any area, or put knowledge to work in solving human problems. The need to think critically in this "tumultuous" intellectual environment means that "the challenge in today's curriculum is to teach students to manage the work of their own minds" (p. 1). Noting that there are nearly as many definitions of critical thinking as writers on the subject, Clarke and Biddle offer a definition of thinking relevant to the classroom: "[T]he process by which the human mind manages information to understand established ideas, to create new ideas, or to solve problems" (p. 3). Extending Resnick's (1987) research on the kind of thinking required for success in modern life, Clarke and Biddle define ideal thinking as that which:

- Is nonalgorithmic; the path of action is not fully specified in advance.
Is complex; the total path is not mentally "visible" from any single vantage point.

- Often yields multiple solutions, each with costs and benefits, rather than unique solutions.
- Involves nuanced judgment and interpretation.
- Involves uncertainty; not everything bearing in the task is known.
- Involves self-regulation of the thinking process, not regulation by others.
- Involves imposing meaning, finding structure in apparent disorder.
- Is effortful. (p. 3)

Repeating the importance of "managing the work of the mind," the authors argue that if thinking strategies were taught explicitly, and demonstrated in the academic disciplines, high school and college students could better see them to make sense of classroom experience, make sense of experience at large, and control and direct intellectual work. "Instructors in the academic disciplines could and should therefore teach them as surely as they teach the subject knowledge those strategies have produced" (p. 12).

If there is general agreement on the importance of critical thinking in the current undergraduate curriculum, there is considerable debate on precisely how such skills should be inculcated. Talaska (1992), noting the tendency of scholars to focus on the practical educational reforms intended to teach critical reasoning, has compiled a collection of essays by a number of scholars representing diverse contemporary theoretical views of critical reason. He identifies two central questions:

1. whether critical thinking is a general skill separate from content or knowledge context; and
2. whether critical thinking should be taught as a skill in itself or integrated with teaching/learning within the scholarly disciplines (Talaska, 1992, p. xv; Ennis, 1992; McPeck, 1992).

THE ELEMENTS OF CRITICAL THINKING

It is possible, however, to synthesize from a host of researchers and writers the several essential elements that characterize higher-order critical thinking and curriculum elements that develop these abilities.

Active Participants Rather than Passive Recipients

Educators invariably conclude that thinking strategies cannot be taught by a teacher standing at the front of the room but must be learned by individual students, working cooperatively or alone, to make sense of course material (Clarke & Biddle, 1993, p. 1).

Didactic lectures, extensive coverage of content, and mindless drill combine with student passivity to perpetuate the lower-order thinking and learning that students have come to associate with school.
When students do not actively think their way to conclusions . . . they do not achieve higher-order learning. They end their schooling with a jumble of fragmentary opinions, rigidly understood procedures, and undisciplined beliefs. Their ability to mature intellectually and morally, and their capacity and motivation to learn are stunted. (Paul, 1992, p. 4)

Self Direction and Individual Motivation

Lipman (1991) warns that “educators must be wary on many scores, but two are outstanding. One is that it is very difficult to educate uninterested students. The other is that without the presence of certain favorable conditions it is very difficult to educate students well even if they are interested” (p. 212). Other analysts stress the importance of self direction, learning control, and the active self-management of the intellectual process (Clarke & Biddle, 1993, p. 13).

To perfect one's thinking, to develop intellectual discipline, one must develop intellectual values. In other words, genuine education transforms the whole person by transforming one's basic modes of thinking. Indeed, properly understood, education implies a self-motivated action upon one's own thinking and a participation in the forming of one's own character. Through it we cultivate self-directedness of thought and transform our values. (Paul, 1992, p. 8)

Teaching students to search and interpret information must allow for considerable individuality. The teachers . . . have all developed ways to show students how to set a purpose for their intellectual work, design a structure for holding information in place, and apply interpretive strategies to the material they have collected. (Clarke & Biddle, 1993, p. 22)

Conceptual Frameworks in Organizing Knowledge and the Role of Prior Knowledge

Ausubel (1968) speaks for many prior and subsequent learning theorists when he concludes that meaningful learning occurs when we connect new information to what we already know. The most important single factor influencing learning is what the learner already knows. Hirsch (1985; Hirsch et al., 1987) argues for “cultural literacy” on this basis. Researchers have further found that:

- Students who already know a lot find it easy to learn more.
- Students who know little have little basis for learning more.
- Students who have included errors in their learning may only confirm those errors in trying to learn new information . . . Students who know little are more easily misled by the little they know. (Clarke & Biddle, 1993, p. 18)

Abstract Thinking to Extrapolate from Experience to Ideas or Conclusions

Knowledge originates in experience. One way of extending it, however, without recourse to additional experience, is through reasoning. Given what we know, reasoning permits us to discover additional things
that are the case. . . . Our knowledge is based upon our experience of the world; it is by means of reasoning that we extend that knowledge and defend it. (Lipman, 1991, p. 40)

Thinking can move between concrete experience and abstractions that explain that experience (Clarke & Biddle, 1993, p. 4). Researchers note three levels of abstraction ability: (1) low road transfer (the automatic triggering of well-practiced routines to new contexts that are very similar to the original learning situation); (2) high road transfer (the mindful abstraction of skills and knowledge from one context to another), followed by the possibility of (3) "far transfer" (transfer of learning to situations substantially different from the context in which the learning took place) (Perkins & Salomon, 1988; Smith, 1993). Kolb's (1976) studies of learning style also discovered distinct differences among various disciplines in the role abstraction plays in critical inquiry within the subject area. Physics and mathematics, for example, usually begin with an abstraction, a law, principle, or theorem and then move toward confirmation in concrete experience. History and literature often begin with a verifiable record and then move toward abstraction of trends or themes (Kolb, 1976).

Researchers agree on one additional conclusion: that language—in particular, reading and writing—is perhaps the most significant element in higher order reasoning and in an effective curriculum designed to teach critical thinking.

LANGUAGE AND REASONING

Descriptions of innovative teaching define the prominent role that writing plays in the teaching of critical thinking across the curriculum:

Writing is the most powerful tool we have for making thought visible. In their own writing, students can recognize their own thought process and amend those processes to better suit their aims. Writing slows the tumult of the mind, making the mechanics of thought susceptible to change. With thought represented in physical form, we can help them exert greater control over its development. Used for informal exploration of facts, theories, relationships and procedures, writing serves to help students gain control of their own mental work. (Clarke & Biddle, 1993, p. 15)

While the importance of reading in the humanities might seem obvious, reading is cited across disciplines as essential to critical thinking. A microbiologist emphasizes that:

Reading and thinking are intimately related; and reading is the foundation for the writing exercises in my class that lead toward CT. I am sure that I don't have to convince this audience of the importance of reading so I'll say no more. . . . The tasks for the students to learn in microbiology are: to read critically, to summarize, to digest com-
plex ideas, then translate them into understandable written form, to show relationships to previous knowledge, and to build a knowledge base. (Cannon, 1993, pp. 58, 61)

Talaska (1992) suggests that a theoretical underpinning for looking at reasoning from this perspective is to be found in Wittgenstein's insight about the very intimate connection between thought and language. "For Wittgenstein, anything which you or I would recognize as significant thought is fundamentally linguistic in character (or more precisely, if the thought is not in words, as such, it will be in some kind of public symbol system—which is most often language)" (McPeck, 1992, p. 33). Lipman describes the intrinsic relationship between a discipline and the language of that discipline.

We immerse ourselves in a discipline as we might immerse ourselves in a culture, for in a sense every discipline is a culture, a language (or manner of using language), a form of life. To learn to think in a discipline such as history is to learn how historians think and to think like them. (Lipman, 1991, p. 238)

Talaska cites Postman (1979) on this subject: "As one learns the language of a subject, one is also learning what that subject is" (p. 165). Hirsch (1985) concludes, along with Postman, that reading and thinking are not merely inseparable but inseparable from background knowledge that is discipline related. Lazere (1992) defines a set of criteria for critical literacy based on higher order critical thought through language. Several of the abilities such literacy requires:

- to unify and make connections in one's experience and academic studies;
- to sustain an extended line of thought through propositional, thematic, or symbolic development;
- to reason back and forth between the concrete and the abstract;
- to be attuned to skepticism, irony, relativity of viewpoint... ambiguity, and multiplicity of meaning in linguistic or aesthetic structures. (p. 56)

Finally, we get a glimpse of one apparently unique possibility why reading and writing are such powerful factors or tools in critical reasoning. That power is the ability of narrative structure—stories—to construct unifying conceptual frameworks that organize concepts into a coherent whole. Lipman (1991) notes that we construct concepts "clustering" the information in a given cognitive domain and thereby making it manageable. Narration appeals to our power to understand movement and growth and has a natural ability to attract and structure data. Further, it energizes the reader at the same time that it provides a logical organization to the domain where every new detail that it incorporates has an impact and effect upon every other element—every detail counts and adds to the quality of the whole. "This is why the average unscholarly reader feels refreshed by reading short stories and novels but drained and exhausted by attempting to read technical or highly abstract expositions" (p. 220).
THE POWER OF STORIES

Language incorporated into a narrative structure, particularly as literature, appears to have a peculiar power to extend our own experience by providing us with the opportunity "to come to know men and women we would never otherwise meet, to participate in their lives, indeed to use their lives as dress rehearsals for our own" (Clarke & Biddle, 1993, p. 24). Further, the very act of meaningful reading requires that readers be active "meaning-makers" rather than passive recipients of information (p. 29). deCastell (1989) also draws heavily on the work of Havelock to describe the nature of writing to move human thought beyond the concrete work of particulars to the abstract realm of general ideas. She deplores the failure of educators to recognize the ways language as speculative storytelling (as opposed to factual documentary) expands human capacity to abstract from concrete information to higher-level critical understanding (p. 39). Lipman (1991) suggests that we dismiss storytelling because it is a frivolous activity (pp. 214-15), but he further suggests that the sheer power of narrative to inspire true critical thinking and inquiry may be one reason for the surprising absence of any extensive exploration of this subject among specialists in cognitive development and curriculum:

[N]arrative is intoxicating... It suggests to us other ways of living in and thinking about the world we inhabit—ways that might be at odds with propriety and common sense. Literature provides us with models of thinking, feeling, and acting, models that we fear may be seductive to the innocent mind of the child. (p. 215)

Reviewing the perspectives of other thinkers outside the specific realm of cognitive theory and the undergraduate curriculum, we find that Roszak (1994) and others frame the need for conceptual frameworks in our technological and information-intensive society as a warning. We hold a dangerous illusion that an abundance of information equates with knowledge.

For better or worse, our technological civilization needs its data the way the Romans needed their roads and the Egyptians of the Old Kingdom needed the Nile flood... Nor do I want to deny that the computer is a superior means of storing and retrieving data. There is nothing sacred about the typed or printed page when it comes to keeping records; if there is a faster way to find facts and manipulate them, we are lucky to have it... But I do want to insist that information, even when it moves at the speed of light, is no more than it has ever been: discrete little bundles of fact, sometimes useful, sometimes trivial, and never the substance of thought. (p. 87)

Roszak argues that the mind thinks with ideas, not with information, and consequently that the principal task of education is to teach young minds how to deal with ideas: how to evaluate them, extend them, and
adapt them to new uses. He describes the relationship of ideas to information as what is commonly called a generalization, where generalizing is the basic action of intelligence. When confronted with a myriad of disjointed facts (from personal perceptions or secondhand reports), the mind tries to create a sensible connecting pattern. Conversely, confronted with very few facts, the mind tries to create a pattern by enlarging what little information it has (p. 88).

Wurman (1990) echoes the learning theorists’ assertion that knowledge acquisition and retention rests in the facility of associating that idea with another, either in contiguity, in sequence, or in contrast. He derives his “first law” from this principle of making connections between one piece of information and another: “[Y]ou only learn something relative to something you understand” (p. 168). Defined in the nineteenth century, “apperception” is a process where new ideas associate themselves with old ones that already constitute a mind (Bigge, 1982). Wurman notes that apperception implies “that the mind is like a framework on which ideas can be hung” (p. 169). He goes on to suggest stories as a powerful vehicle for making facts and numbers come alive while permitting information to be imprinted into memory. Stories encourage the application of information which invests it with real meaning, and storytelling is another way of putting information in context and sustaining the flow of memory:

Our whole history, which is the history of the world, was communicated by stories told by one person to another. So everything from generation to generation was passed on by storytelling. . . . Storytelling is probably in our DNA profile. Memory and learning were locked in the embrace of stories, which can often be much more evocative and even more accurate than facts. (p. 236)

Stories are still an extraordinarily powerful way to organize what would otherwise be isolated bits of information (data); and more, they convey ideas and feelings that actually convey more truth than just the information (more real meaning). But, as a civilization, are we becoming increasingly data rich and story poor?

There are many nonempirical arguments and program descriptions for the use of literature to develop critical thinking skills. Markle (1987) advocates teaching students analytical and reasoning skills, suggesting that success in every field is dependent upon an individual’s ability to perceive clearly the complete meaning and intent of written material. But, although analytical reading is a primary means of learning, students often receive little direct instruction in analytical reading, creative thinking, problem solving, or decision making. While most students adequately comprehend the literal information in written material, many exhibit weakness in higher-order thinking and evaluating. He warns that children, reading less and less or being read to less and less, get few opportunities to form abstract images in our visual society. Roth (1989) relates reading more explicitly to critical thinking:
A well written literary tale unfolds from a problem and leads to the critical thinking skills of planning, decision making, reflecting and evaluating. Critical reading actively involves the participant in many levels of thinking, beginning with anticipation, forecasting, and inquiry and continuing through the problem-solving processes. (p. 143)

Recent studies have sought to investigate formally the relationship between critical thinking (or reasoning skills) and the process of reading. In a study of undergraduate students' reading, writing, and problem solving mechanisms, Roseberry et al. (1989) discovered that successful college students share an important belief that writing and reading are fundamentally purposeful acts of communication. Their research illuminates the nature of problem-solving in skilled reading and writing processes that are held as goals for college students. They note that college students are faced with the problem of constructing meaning from some purpose and of activating prior knowledge to understand a written text.

Knowledge is not just used to situate a text. It is used in all phases of reading, from thinking about a text or a topic before reading to evaluating its central theme or argument during or after reading. Readers continually look for connections between the ideas in the text and their prior knowledge. Prior knowledge can, in this way, help readers draw inferences about an author's intentions and beliefs and can serve as a basis for acquiring knowledge. The successful reader continually questions the assumptions that are implicit in the understanding he has built; he will reread the text for specific kinds of evidence; and he will formulate and revise hypotheses regarding the author's intended meaning. (pp. 4-5)

The researchers conclude that students need to realize, in particular, that authors have beliefs and intentions, and that these influence the meanings of texts.

Farley and Elmore (1992) examined the relationship of reading comprehension for underachieving college first year students to their critical thinking skills, vocabulary, and cognitive ability. Their synthesis of current research suggests that reading is a process of constructing meaning through the dynamic interaction of the reader, the text, and the context of the reading situation that results in the acquisition of knowledge, experience, or information. Reading comprehension is thought to depend upon the reader's ability to interrelate appropriately acquired knowledge with the information suggested in the text. Researchers have reported that college students with lower verbal ability were able to identify individual words and facts but were unable to combine the information in the text with the previously acquired information. This inability to integrate ideas was accompanied by an inability to draw logical inferences and the inability to check ideas while reading to see if the ideas contradicted one another. College students were found lacking in deductive and inductive reasoning, the ability to infer, to recognize assumptions,
and evaluate conclusions. Thus, reading comprehension was directly linked with a variety of cognitive or critical thinking abilities. Based on their research, the authors suggest that study skills programs involving verbal, spatial, and quantitative reasoning skills may serve to increase reading comprehension (Farley & Elmore, 1992, p. 929).

Lipman (1991) criticizes the emphasis on vocabulary weaknesses, spelling deficiencies, and a lack of stylistic appreciation in the way reading is taught. Citing research indicating that reading comprehension rests upon the formal skills of deductive inferential reasoning and upon such skills as analogical reasoning, he argues that reading comprehension would be improved if these primary reasoning skills are strengthened. Reasoning skills appear to contribute directly to the reader's acquisition of meaning and the accessibility of meaning that most effectively motivates the reader to continue pursuing the reading process (pp. 38-39). Noting test evidence confirming a very high correlation between student performance on reasoning tests and reading comprehension tests, Lipman summarizes a body of research demonstrating that, if reasoning and reading were both taught to students, the results would be better than if reading alone were taught (p. 47).

CRITICAL THINKING AND BIBLIOGRAPHIC INSTRUCTION

Not surprisingly, critical thinking in higher education has been the focus of considerable discussion and program development within academic libraries in recent years, primarily as both a teaching strategy and as a desired outcome for bibliographic instruction. Kirk (1984), Mellon (1982), McCormick (1983), O'Hanlon (1987) and others built on the thinking of a core of seminal thinkers in bibliographic instruction who examined learning theory and the importance of conceptual frameworks in user instruction. Bodi (1988) suggests that the important question is not whether academic librarians should teach students how to find information on their own, but how academic librarians can most appropriately encourage and reinforce what is being done in the classroom. She emphasizes that "academic libraries support their institutions' curricula with a variety of materials in a variety of formats. An equally valid role of the academic library should be to support and reinforce the development of critical thinking among students" (p. 151).

Citing the need for alternatives to the term paper assignment, Gibson (1989) describes the college student following the practices he learned in his secondary school experience and hastily stitching together yet another research report with little or no critical analysis, synthesis, or evaluation of the sources used. He goes on to argue for a critical thinking component in the general education curriculum, suggesting that:

in becoming critical thinkers, students learn to see connections between disciplines, to focus to significant questions, to sort out the genuine from the spurious, and to examine their own assumptions and limitations. . . . Through efforts at improving critical thinking
in the general education curriculum, librarians can help restore some of the real knowledge, as opposed to mere information, in the minds of students and faculty. (pp. 308-09)

Mirroring the debate between courses on critical thinking for its own sake and critical thinking within a knowledge-centered context, Plum (1984) advocates the discipline-centered model as a structure for bibliographic instruction and suggests that students must recognize that research methods, or the principles behind criticism, are not universally accepted within the discipline. A variety of critical approaches to a single work can legitimately arrive at different, yet valid, interpretations and criticism. MacAdam and Kemp (1989) extended the discussion to the role of bibliographic instruction in helping students develop understanding and skills in critical inquiry.

While the nature of research is fundamentally inquiry, it is inquiry... with a specific object in mind. . . . Further, it is inquiry with an implicit standard against which the results... will be judged... even the student's own sense of validity or "rightness." At its best, bibliographic instruction can and should give a student the wherewithal to formulate the research problem, translate this into the basic inquiry to be investigated, establish a standard or set of measures by which all information gathered will be accepted or rejected based on that standard, and finally, be able to articulate a defense and justification for the entire character of this process. The student learns in essence to think, to think in a new way, and to question, challenge, keep, discard, and analyze information. These are skills that are crucial and intrinsic to the self-directed, life-long learner. (p. 237)

These analyses are distinguished by the absence of any significant discussion of the role of reading and critical thinking. MacAdam and Kemp, noting that intellectual courage is the first attribute requisite for critical inquiry, cite Handlin's sentiment that the sheer contemplation of the wide range of possibilities represented by the wealth of resources available in a research library should inspire confidence that "not all the correct answers are known; not all the right questions have ever been asked. There is still the opportunity for involvement in the long process of asking and answering of which these collections are evidence" (Handlin, 1987, p. 216). Bibliographic instruction programs, then, become instruction framed in the context of information the students already know, directed at the intellectual framing of an inquiry, formulation of search strategy, and the critical ability to select and synthesize information into knowledge. At the same time, students develop the curiosity, motivation, and independence characterizing true critical thinking.

**BOOKS AND UNDERGRADUATES**

With an understanding of the apparent relationship between reading and critical thinking, it is necessary to examine the role of books and reading in the contemporary undergraduate curriculum. In a major over-
view of student reading among university students in Great Britain, we find trends reflecting changes in colleges and universities in the United States. Graham (1986) describes changes in teaching methods toward seminar and tutorial teaching, and the development of assignments requiring a greater degree of independent work by the student (undergraduate theses, open examinations, and extended essays and projects, for example). He also notes the individuality of student needs and consequent user behavior in relation to libraries and bemoans the fact that most librarians and academics, if they think of books and libraries in relation to students, generally concentrate on the issue of adding correct titles to the reserve collection. He adds that "one aspect of the gap between lecturers' expectations and the reality of student behaviour is the tendency for such material not to be used as heavily as intended" (p. 15). Graham cites a tension all too familiar to academic librarians: greater and more varied demands on libraries, and increasing demands on both material and staff resources at the same time that budgets are static or declining.

McElroy (1986) suggests that, if a student is to read profitably and with some enjoyment, then library collections and services, curricular demands, and his own study skills and expectations must be in harmony. He emphasizes that students' personal reading needs—as well as those imposed upon them by reading lists, assignments, and examinations—are important and must be met if academic progress is to be made. He proposes a model showing how different needs (categorized as library, curricular, and skill/attitude needs) are related to each other and to the student. Faculty and students clearly hold differing views toward reading. Faculty, including librarians, have chosen to serve a discipline and the literature while college students generally expect that the discipline and the literature must serve them and their different, perhaps job- or career-related, objectives. College students seek the assurance that the material they are asked to read (and the time thus spent) will contribute directly to learning, academic success, and graduation. McElroy describes a powerful role for the faculty in conveying a real need to read and show personal enthusiasm for reading. Faculty should be willing to allow teaching to be shaped by the reading that the student actually undertakes, as evidenced by the student's questions and responses in the classroom, and should encourage their students to read not merely by reading lists but by constant reference to their own contemporary reading. Students should recognize that different authors take different approaches to the same topic. Further, the process of "reading" may encompass the identification, retrieval, synthesis, and representation of intellectual matter in a variety of formats from print to visual.
Echoing the role of student motivation in developing reasoning skills, McElroy (1986) stresses motivation as a key factor in considering the students' information handling skills and their impact on reading needs and attitudes. "What does the student need/wish to be able to do? How can the problem-solving abilities of the literature be made manifest? How can the perhaps reluctant or non-habitual reader be brought into comfortable and fruitful contact with problems of information retrieval, study, synthesis, and representation" (p. 55)?

Harrison (1986) elaborates on the suggestion that "reading" is not necessarily limited to traditional print materials and offers for the first time a distinction between basic information gathering and reading to serve the purpose of higher understanding of complex ideas. Student reading needs become the library provision of information to students in whatever format the information is best presented. Evans (1986) further extends the "great debate" surrounding book provision in higher education, noting changing attitudes toward the book reflecting a changing society as various technologies compete with it as a storehouse of knowledge. Evans argues for greater leadership and innovation from book publishers and vendors in examining the role of reading and the changing formats of knowledge, as well as greater cooperation among faculty, booksellers, publishers, and librarians. She questions where electronic technology and new ways of knowledge storage and retrieval have left the book as a "tool of learning" for the modern student. Evans warns that the issue is more complex than generally recognized, with text-based learning alive but not in very good health. Noting a slowing in the reading rates of many of her students who seem to regard the activity of reading as a form of avoidable work, she suggests one consequence is that "the student's own critical ability is being significantly under-used or by-passed by the pre-selection of the 'most relevant' highly subjective secondary source material by the lecturer himself" (Kingston, 1986, p. 172). Evans astutely points out that faculty are, by definition, individuals who have thrived in the world of the written word and may have an unrealistic nostalgia for the highly literate undergraduate while confronted with students possessing a new literacy residing "principally in the domain of (verbal) articulacy and technical aptitude" (Kingston, 1986, p. 174).

Finally, Mann (1986) summarizes the discussion on the importance of independent reading and teaching students "to learn how to learn." He notes the number of scholars who argue that "learning how to use books is a part of the total learning process. . . . A great deal of university learning (perhaps the best parts) comes from what the student teaches himself or herself" (p. 183).

Metz (1983) has extensively analyzed undergraduate use of subject collections in a university library and reports that, of the items in circulation at any given time, 33 percent of the charged materials were charged to undergraduates (p. 80). He further notes that, while the reading patterns of graduate students in various fields resemble those of the faculty:
undergraduates in all areas of study rely less on specialized materials than do faculty and graduate students; that is, knowledge of an undergraduate's major gives us significantly less ability to predict what library materials he or she will borrow than we gain from knowing the affiliation of a faculty or graduate borrower....undergraduates rely on the literatures associated with their major fields for less of their reading than do the other patron groups [particularly in the physical sciences]. (p. 81)

In summarizing and confirming earlier data by McGrath (1976), Metz found that a larger percentage of undergraduate subject reading is typically by "outsiders" (students concentrating in disciplines other than their selected reading) than graduate student reading (p. 92). "Undergraduates read in a much less predictable and selective fashion...but it is almost certainly true that for students, no less than for faculty, a library system provides the single best form of access to literatures across the entire span of knowledge" (p. 94). It would appear, then, that the undergraduate experience presents a unique opportunity to encourage students to read more widely than their field of study, provided there is adequate motivation to do so.

A fundamental question obviously is: Do students read for pleasure and, if so, what are they reading? A study by Davis (1975) of the three year's worth of campus best-seller lists as published in The Chronicle of Higher Education from 1970-1973 confirmed that students read many of the same best-sellers read by the general public but at the same time also read many books reflecting their seeking new perspectives in their quest for identity, including books on self-understanding, social issues, fantasy, religion, sex, and alternative science. Students read very little poetry but did read novels, "although the novels [didn't] always make the best-seller lists because students read an author and may select from any one of several books the author has written" (p. 220). DePalma (1991) notes:

In interviews with more than 65 students at colleges throughout the Middle West...few students said they read newspapers regularly or venture into literature beyond course requirements. When they bought a book that was not required for class, it tended to be something simple: the comics characters Calvin & Hobbes top many a campus bookstore's bestseller. (p. 220)


Williamson (1987) provides teaching anecdotes reflecting changing tastes in college students' literature preferences, noting:

College students today seem utterly unsentimental and rather ungenerous in their responses to [19th century] fiction. They have little sympathy for romantic love, self-love, self-sacrifice or self delusion....Pip of Great Expectations, who longs to better himself and
become a gentleman, makes sense to them. . . . Austen's girls they like. . . . They are interested to learn how these girls get ahead in love and at the bank, and how they maintain their integrity and individuality at the same time. (p. 159)

Faculty at the University of Buffalo have drawn up an "Unrequired Reading List" as a way to encourage students to read. Recognizing the need to help undergraduates enjoy reading, faculty admit the list is not intended to be a compilation of great books. The selection of titles is decidedly eclectic, ranging from *The Adventures of Huckleberry Finn* and *Zen and the Art of Motorcycle Maintenance* to the *Joy of Cooking* ("A College Reading List....," 1993).

In one of the most reasoned arguments for academia to resolve the argument over "canon" and what works constitute the proper foundation for an undergraduate curriculum, Graff (1992) warns that the real issue is the failure of students to embrace reading at all:

it won't matter much whose list of books wins the canon debate if students remain disaffected from the life of books and intellectual discussion, as too many have been since long before any canon revisionists arrived on the academic scene. It is easy to forget that for most American students the problem has usually been how to deal with books in general, regardless of which faction is drawing up the reading list. (p. 11)

He reminds the academic community that the traditional role of the university is an essential contradiction: on the one hand to preserve, transmit, and honor our traditions, yet at the same time to produce new knowledge, question received ideas, and perpetually revise traditional ways of thinking (p. 7). Graff provides a lengthy discussion on how both "canonical" and contemporary works can be taught to acquaint students with the nature of the debate and instill both critical thinking and an enthusiasm for intellectual investigation and dialogue. Describing his own early dislike of books and the world that books represented, he describes how he came to a love of literature, history, and other intellectual pursuits through exposure to critical debates over the works he read. We cannot help reading books, Rorty (1988) says, "with questions in mind—not questions dictated by the books, but questions we have previously, if vaguely, formulated" (p. 32). Finally, Graff argues against the fear that reading works other than the classics will destroy students' ability to consider complex questions. "The fact is, with the world of knowledge becoming increasingly larger and more complex, the last thing anyone needs to fear is that the study of culture will become too easy. The seductive assumption, however, is that only certain classics possess enough substance to justify being studied" (p. 97).

**ENRICHMENT READING AND ACADEMIC LIBRARIES**

Library efforts to stimulate student interest and encourage reading fall into several categories:
maintaining popular reading collections or "browsing rooms,"
programs in promoting enrichment or pleasure reading, and
reading lists compiled often in collaboration with faculty.

Christensen (1984) describes the Brigham Young University browsing collection and his analysis of circulation statistics which led to collection changes including: more paperbacks, emphasis on fiction especially science fiction, fantasy, and romance (which had been found to be the most popular subjects). He notes the problem of selecting titles for popular reading collections, often little more than a guessing game in many libraries. A literature search on the subject produced no substantive sources, and "gut feelings" seemed to guide book buying for browsing collections. Suggestion boxes, reading lists, lists of recommended authors, observation of what is circulating, book wear, personal reading habits, inventory and circulation losses, and visual appearance of the cover were among the methods used to develop such collections.

Zauha (1993), in her extensive review of recreational reading, readers' advisory services, and browsing rooms in academic libraries, notes that today's browsing rooms are vestiges of the 1920s and 1930s, developed in an era when academic libraries vigorously promoted recreational reading by students:

As repositories of works chosen from the main collection for their ability to uplift, relax, and stimulate the student reader. . . . Browsing rooms still perform this function today, offering readers the cream of the university's newest acquisitions. Works of popular fiction, poetry, biography, and current events are selected out of the larger collection, enabling readers to cope with the profusion of information that has become characteristic of the academic collection. (p. 57)

Noting that almost no evidence can be found that browsing rooms are promoted or widely discussed today, she warns of the decline of institutional support and of the danger that they are in jeopardy of extinction in times of scarce money. How does the academic browsing room further the mission of the academic library to support research and curriculum? Wiener (1982) asserts that recreational reading should be considered a necessary and inevitable element of service, as a low-cost high benefit means of readers' guidance, and as a center of intellectual and cultural activity for individuals and for groups. Zauha goes on to suggest mission-based roles for browsing rooms: as a public relations tool, a general stimulus for the intellectual life of students and faculty, a way to combat the academic library's tendency to overwhelm users and stave off information overload, as a bridge to the regular collection, and as a gathering place for students unaccustomed to academic life in general.

The following strategies are among those that have been used to promote reading:
At New Mexico State, the library compiles "In Celebration of Spring," an annual spring booklet of faculty reviews of novels to promote summer reading. Criteria include entertainment value, insight, and significance of the work. The longer-term goals of the publication are to encourage students in a lifelong reading program, to stimulate students' recreational reading, to allow students to get to know faculty on a more personal basis, and to promote good public relations between the community and the university (Mayhood & Stabler, 1993).

Library staff at the University of Tennessee at Martin were delighted at the response from officials, including the chancellor and the governor, when they invited top administrators to list "the book that made a difference" in his or her life. The titles were subsequently incorporated into a display in the library (Nance, 1992).

Bucknell University Library invited faculty and administrators to come to the library to speak about a significant book in their lives, not a review or academic critique, but about the personal influence of a particular book on an individual life. The goal of the series of presentations, "Books that Made a Difference," was to gain more insight into our colleagues and to bring more people into the library (Thompson & Sims, 1992).

At the University of Texas at Austin, the College of Liberal Arts designed a four-year enrichment reading program, "The Texas List of Unrequired Reading" (1986). The stated purpose is to promote interest in good reading not by requiring students to read but rather by suggesting titles which might provide a sound program for personal study.

Many libraries prepare enrichment or pleasure reading lists for students for a variety of contexts. At the University of Michigan, the Shapiro Undergraduate Library reference staff compile "Read, Read, Read," an annual list the University Admissions Office sends out to 10,000 potential students nationwide. Printed poster-format on high-quality newsprint, the list is designed to encourage pleasure reading and to help college-bound students get a taste of the enjoyment, richness, and variety of books at the college level.

But if faculty and librarians still believe in the importance of encouraging reading as an important component of the intellectual life of the undergraduate and for lifelong learners, what are the implications for educators of students who are growing up in an image culture?

**Reasoning in an Image and Electronic Culture**

Birkerts (1994), in *The Gutenberg Elegies*, describes the cultural metamorphosis from the stable hierarchy of the printed page to the rush of impulses afforded by electronic communication. Suggesting that the price
of retooling for the electronic millennium is a sacrifice of the incompatible aptitudes required for reading and meditative introspection, he questions "who among us can generate the stillness and concentration and will to read Henry James, or Joseph Conrad, or James Joyce, or Virginia Woolf as they were meant to be read (p. 191)"

Describing books as portable enclosures, places one can repair to release the private, unsocialized, dreaming self, Birkerts writes:

> The shadow life of reading begins even while we have the book in hand—begins as soon as we move from the first sentence to the second and start up a memory context. The creation and perpetuation of this context requires that we make a cognitive space, or "open a file," as it were. Here is the power, the seductiveness of the act: When we read, we create and then occupy a hitherto nonexistent interior locale. (p. 98)

If we lose this ability to focus on the interior, apart from the external world, we risk the "progressive atrophy of all that defines us as creatures of spirit" (p. 194).

Offering a near-apocalyptic vision of the death of higher civilization as we know it, Sanders (1994) weaves a complex argument on the relationship between human reason and language. Beginning with an analysis of oral preliterate culture and its dependence on ritualized languages and stories to sustain the culture and store information, he cites Havelock's (1986) belief that:

> Such language has to be memorized. There is no other way of guaranteeing its survival. Ritualization becomes the means of memorization. The memories are personal, belonging to every man, woman, and child in the community, yet their content, the language preserved, is communal, something shared by the community as expressing its traditions and its historical identity. (p. 70)

But written language and the existence of "authors" permit originality, the emergence of the self, and an individual separate from the community, able to speak with a singular voice shaped by singular individual experience. Sanders (1994) describes this transformation explicitly:

> Writing—in particular, as we shall see, alphabetic writing—enabled this major change to take place. The reader could go over the same sentence time and time again, puzzling out its meaning, analyzing its structure... A sentence could be scoured and sifted, finally for the very last drop of its truth. Reading and writing provided the key exercise for the literate mind, allowing a critical eye to be turned to everyday experience (p. 19). The fact that sentences can be read many times—re-searched for content silently by a person and in seclusion—slowly feeds and fills out that activity we call self-reflective critical thinking. (p. 67)

A world dominated by electronic media may ultimately deprive people of the ability to engage in reflective thought. Pearce (1992) provides an analysis of the potentially devastating effect of the bombardment of electronic images on human neural development:
Television floods the infant-child brain with images at the very time his or her brain is supposed to learn to make images from within. ... Television feeds both stimulus and response into that infant-child brain as a single-paired effect and therein lies the danger. ... As a result, much structural coupling between mind and environment is eliminated; few metaphoric images develop; few higher cortical areas of the brain are called into play; few, if any, symbolic structures develop ... for there will be no metaphoric ability to transfer those symbols to the neocortex for conceptualization, and subsequently, no development of its main purpose: symbolic conceptual systems.

(Healy 1990) also argues that American students are not developing the neural networks upon which higher-level human thinking depends. In the critical periods when these powers must be developed by talking and listening, children are watching television instead. She describes the plasticity of the brain and its failure to form vital neural pathways in the absence of the experiences it needs to do so. She further warns that we may be raising children with "different brains" at particular risk for language-related learning, unable to think successfully about any problem requiring higher order thinking skills (pp. 45-46).

Steiner (1989) and Sanders (1994) explore the role of literacy and the ability of humans to reason abstractly, specifically by envisioning the future and by framing and considering "counter-factuals" (the ability to imagine realities other than those of immediate experience). "The future, counter-factuals—these two very crucial grammatical constructions serve as vessels into which we pour dreams and desires of change, of progress, of hope" (p. 56).

Sanders (1994) relates the decline of language directly to a decline in the loss of a sense of self among young people, perhaps a whole generation of "post-illiterates" who have abandoned, and even disdain, the book. He describes the unthinkable: a generation dispossessed of language—both verbal and written (p. 73). But Sanders appears to lump all electronic tools together, from the use of computers for writing to the emergence of a media dominated culture. He argues that: "Revising and editing are simplified with a PC, but what the student is doing is not writing in the truly literate sense ... it would be impossible to compose The Adventures of Huckleberry Finn on a word processor" (p. 146). When one considers that most writers, even the most scholarly, use electronic means to record their thoughts, perhaps the debate runs afield when it attributes an unfounded monolithism to emerging technology.

Bolter (1991) argues for a more complex vision of the role of the book:

The printed book ... seems destined to move to the margin of our literate culture. The issue is not whether print technology will completely disappear; books may long continue to be printed for certain kinds of texts and for luxury consumption. But the idea and the ideal of the book will change: print will no longer define the orga-
nization and presentation of knowledge, as it has for the past five centuries. This shift from print to the computer does not mean the end of literacy. What will be lost is not literacy itself, but the literacy of print, for electronic technology offers us a new kind of book and new ways to write and read. (p. 2)

And Lanham (1993) repeats Graff when he suggests that the real question is not whether students will be reading “Great Traditional Books or Relevant Modern ones” in the future, but whether they will be reading books at all (p. 3). He further suggests that we explore ways to use electronic technology to preserve “the book” without “preserving it in pickle” (p. 197).

Popular laments like Boorstin’s (1987) *The Image* and Postman’s (1985) *Amusing Ourselves to Death* describe the decline in values and reasoning in a media-dominated culture. Postman attributes the breakdown in cultural values to the media-induced decline in critical reasoning. Electronic media appear to have irreversibly changed the character of our symbolic environment in a culture whose information, ideas, and epistemology are given form by television and not by the printed word. Print is the hero; image is the villain because it does not require higher order abstract thinking (Lanham, 1993, p. 237). But Lanham argues for a distinction between mass media and the emerging digital environment: “We should not confuse this narcotizing of American society, horrible as it is, with the mixture of word, image, and sound emerging now through digital multimedia techniques (p. 201). Kernan (1990) and Hardison (1989) argue that electronic technology has destroyed the print-centered product we think of as literature along with the book-centered culture it created. But Bolter (1991) again takes a far more optimistic view of the ability of electronic technology to offer us a new kind of book and new ways to write and read, “a fourth great technique of writing that will take its place beside the ancient papyrus roll, the medieval codex, and printed book” (p. 6), suggesting “in fact, hypermedia is the revenge of text upon television. . . . In television, text is absorbed into the video image, but in hypermedia the televised image becomes part of the text” (p. 26).

Ulmer (1989) urges a positive response by schools to what may be a profound change in the process of conceptual thinking in an image and electronic culture, suggesting that schools participate in the invention of a new style of conceptual thought. He challenges educators to learn how to write and think electronically—in a way that “supplements without replacing” analytical reason. One essential paradox in any current examination of the issues at hand—namely the optimism expressed for electronic text—is that the analysis reflects an experience of print literacy that an electronic generation will lack. What will happen “to future generations of students who differ from Lanham, Landow, and Bolter in not having spent the first forty years of their lives mining the base cognitive
and psychological resources of print literacy. Those future generations may lack training in literate reason, linear argument, left brain conceptualization" (Tuman, 1992, p. 80).

But more recent analysis (Forsberg, 1993) offers some insights on helping students develop critical and higher order thinking in an image culture. Arguing that responsible education must teach children how to assess the image world in which they find themselves and how to evaluate the messages bombarding them on a daily basis, Forsberg warns that educators do not yet know how to teach students to think critically about this "enigmatic" world (p. ix). Recognizing that a major factor behind this cultural transformation is the shift in our dominant forms of communication—the movement away from a print-based culture toward an image-immersed culture—Forsberg warns that the television age may produce a new generation of people whose only vision of reality is the fragmented distorted image. She pinpoints the essential curricular challenge:

Books, in contrast to television, normally present us with logically ordered ideas: an overall theme, an introduction, a body, and a conclusion. . . . We know how to teach students how to evaluate a book. Television . . . has no such order or logic. At one moment it may show the most tragic image of human suffering and in the next moment it may present us with an image of McDonald's golden arches. There is no coherent line of reasoning, there is no standard for measuring the validity of one image over another, nor is there a logical flow to the sequence of images. . . . From what framework do we criticize this medium? (pp. 16-17)

Forsberg and Postman describe the way in which television or visual electronic media fail to allow the development of abstraction ability. Words refer to abstract ideas whereas television presents us with concrete images. The word is always an abstract concept removed from what it represents, whereas the image is always a concrete representation having some correspondence to what it represents. Postman (1982) asserts: "Pictures do not show concepts; they show things. Images do not require analytical thought; they do not require critical thinking skills, they ask us to feel not to think. . . . Televised images do not require critical thinking skills, nor do they foster critical thinking skills" (p. 79). Forsberg's research, however, concludes that it is not only crucial, but possible to develop image-based critical thinking skills. Extending Korzybski's (1958) theoretical concepts for the critical evaluation of language to the critical evaluation of images, Forsberg defines four underlying principles of critical thinking about any system of symbols: understanding the correspondence between symbols and reality; being conscious of abstraction; recognizing the correct order of symbolizing; and understanding the structural biases of our symbols (p. 87). She describes a general model for a critical think-
ing curriculum in an image universe, a curriculum designed to create an awareness of differences, context, change, relationships, what has been neglected, forgotten, or left out, and finally a healthy skepticism (pp. 165-84). Future research in this area may offer some hope that the transition from a print to electronic culture does not have to be at the sacrifice of reasoning and analytical skills, providing elementary and secondary education moves quickly to incorporate image-based critical thinking in the curriculum.

THE ROLE OF THE ACADEMIC LIBRARY

What are academic librarians to make of this rapidly changing world, much of which is seemingly beyond their power to influence? And what role should academic libraries play in the undergraduate curriculum when teaching faculty are confronting a new generation of students cognitively and affectively different from their predecessors? If the future of the traditional codex appears bleak—if not completely moribund—conflicting views suggest differing interpretations on how damaging this marginalization of print as a medium might be. The issues are far too complex to lend themselves to easy prescriptions, but it is possible to synthesize several conclusions from the volume of research and discussion on reading, critical reasoning, and the increasing digitization of knowledge.

The book, even in its traditional form, is still far from dead. Stoll (1995) raises some provocative questions challenging our overconfidence that information technology will preserve the breadth of our knowledge, particularly in ways that are meaningful and accessible. Negroponte (1995), soi disant nonreader and head of MIT’s Multimedia Lab, explains why his book Being Digital, was being shipped by Knopf as atoms residing on a printed page rather than as transmitted in digital bits. The current technological interface is still clumsy; the success of his text-only column in Wired magazine confirms the large audience for information integrated as stories; interactive multimedia leaves very little to the imagination, while the written word sparks images and evokes metaphors that get much of their meaning from the reader’s imagination and experiences. Imagination is still a powerful human extension for understanding things outside the realm of personal experience (pp. 7-8). At the same time, for many kinds of information, the printed text has been perhaps the least effective and most restrictive medium of communication. Emerging technology, from hypertext to multimedia and beyond, can enhance understanding rather than limit it.

Stories, narrative, literature, and art appear to be intrinsic components of human culture, but the assumption that any particular medium—even one that lasts for centuries—will exist unchanged forever is naïve.
Coover (1992), in his widely read essay in *The New York Times Book Review*, notes that "you will often hear it said that the print medium is a doomed and outdated technology, a mere curiosity of bygone days and destined soon to be consigned forever to those dusty unattended museums we now call libraries" (p. 1). But Coover goes on to offer a vision of reader/author cohabitation in a new nonlinear discourse afforded by hypertext. A curriculum established around writing in hypertext is emerging at colleges and universities across the country, and librarians must be willing to explore new collection development and curricular roles in this context. Sustaining the culture of the book may mean preserving our stories and fostering the student's engagement with those stories regardless of the format used to record them.

Critical thinking is likely to continue as a significant component of secondary and postsecondary education. Librarians as faculty, as designers of user instruction, and as collaborators on curriculum issues must keep abreast of research and emerging models in this area. Further, librarians need to extend the body of research and practice in academic librarianship related to learning theory and critical thinking in order to devise appropriate models for the electronic environment.

If, as some researchers suggest, human cognitive development is being profoundly altered by image-intensive stimuli from infancy, it is certainly true that higher education must respond to those changes. But it is also likely that the elementary and secondary curriculums will have to reckon with this issue first. There is a critical role for academic libraries to play, not only in even closer partnership with teaching faculty and administrators working on redesigning undergraduate education, but in cooperation with elementary and secondary schools to build effective partnerships in the education continuum. At the same time, librarians must develop new and stronger partnerships with publishers and media developers, all of whom are diversifying in response to the bottom line. From electronic reserve systems and customized textbooks to multimedia product development, scholarship and learning may suffer, not from the technology, but from decisions made on market factors alone unless higher education institutions are actively involved.

Finally, academic librarians must be willing to accept the distinction among text and print, art and information, knowledge and its medium of transmittal. There is a future for the making, though not to be won without a profound sense of relinquishment and extraordinary transformation for all of us who serve as the bridge from our own past to our students' very different futures. How we design our facilities, what we define as "collections," how we teach students, and, most important of all, how we sustain our commitment to preserving our culture's stories and encouraging students to know them—the success with which we do this will determine our future.
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Books, Reading, and Undergraduate Education

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ABSTRACT
FORECASTS OF THE DEMISE OF THE printed book or codex and the associated changes in the academic library foster valid questions about the continuing place of reading and print media in American colleges. This article cites the increasing interest paid to information technologies by higher education, particularly college libraries, and the corresponding competition from radio, television, motion pictures, video, and a changing campus culture characterized by separation rather than unity, isolation rather than community. The author recognizes a nearly universal expectation for immediate gratification of a need for answers rather than understanding. He suggests that reading remains a fundamental building block for a liberal education, providing a broad basis for knowledge and understanding. The essay concludes with an advocacy for reinforcing student critical reading skills and habits giving them a contextual framework for a lifetime of self-directed learning. The book remains at the center of a critical reading program.

INTRODUCTION
This article offers a consideration of the place of books and reading in American undergraduate education. In it, the author considers the current popularity of reading in American culture and how this is reflected among undergraduates. Some key contributing factors which influence the current popularity of reading are identified. The significance of books in the teaching and learning of undergraduates is discussed, especially in contrast to the significance of other communications media.
The author also theorizes on the role of college libraries in affecting this significance. Finally, the article ends with a discussion of the relationship between reading and lifelong critical thinking skills.

During the past fifteen years, the author has observed an increasing discordance between the scholarly habits and readiness for learning of undergraduates and their college instructors. This discordance includes college librarians, who frequently measure increasing student preference for the convenience of periodical literature and the growing variety of electronic media rather than for books.

**The Future of Books in American Colleges**

Carl Kaestle et al. (1991) have observed that "even books may be more necessary than discretionary for many people in a society that has become very print-oriented..." (p. 178). Recent reports from various governmental and educational agencies indicate that the nation's adult literacy, reading comprehension, and verbal skills are at disturbingly low levels. Furthermore, I wonder about the future of "necessary communication" being affected by "the substitution of electronic media for print media."

Thus far, and despite the direst predictions, Kaestle et al. report that the portion of the public that reads books has remained roughly constant during this age of electronic communication (p. 165). In fact, according to annual book sale statistics, the percentage of people that buys books has actually increased. But what is being read in greater numbers is less often the material upon which critical thinking depends.

A book's positive qualities are readily apparent in the college environment. They can be easily produced in multiple inexpensive and identical copies, thereby enabling groups of students to acquire and use them independently of each other. They are compact, easy to transport, and require no additional equipment to use them, supporting a variety of teaching and learning styles and environments.

Critics of the printed book point out their limited capacity for true interaction with readers. They attack the book's linear sequential organization, arguing that it makes either the deliberate or random access to selected portions of the text cumbersome. As this argument goes, the book's singular advantage—an unalterable text—actually poses negative constraints for those who crave an unfettered interaction (reorganization of its contents, additions to, and revisions of the author's ideas and statements).

All of these concerns ignore the book's nearly infinite flexibility for reader interaction, largely dependent on the reader's active imagination and capacity for critical thought. In this sense, no format is more flexible, less linear in format, than the book, controlled by the reader's mind. The arguments in the preceding paragraph suggest that the passive mind set of many today may be encouraged by the nonprint formats which are
used not only to entertain but to teach and inform. Reading books, ultimately, excites and engages the imagination of the reader, fostering an active attitude toward learning.

Are books, in fact, already "obsolete?" This is the conclusion of Ted Nelson (who coined the term "hypertext"). Perhaps the union of print and words is not essential. College students as scholars in growing numbers are burdened with complex social concerns, very high costs for education, and time-consuming jobs to meet these costs. Their successful scholarship is further hampered by a decline in the amount and variety of reading at the secondary school level, fostering a lack of contextual understanding with which to appreciate the variety and extent of college reading assignments. And, therefore, Nelson concludes that, with the advent of electronic communications, this information age "is really the age of information lost" (Max, 1994, p. 71).

Hypertext and multimedia formats represent the most critical immediate challenges to printed text. These new communications formats challenge the present prominence of books, newspapers, journals, and even video through the variety of choices they allow for interaction with their content. College libraries are increasingly offering reference tools like dictionaries, encyclopedias, and indexes in electronic form. Conjectures like those of Donald Norman, founder of the University of California, San Diego's cognitive science department, that "within 10 years, dictionaries will essentially all be electronic" are not that radical (Lyall, 1991, p. 3). Already, their print counterparts are seldom the first choice of undergraduates.

By no means has the permanence of the printed book and its organization and preservation by libraries been mortally impaired. Although a growing number of printed works have been fully transferred to digitized texts on, for example, the Internet, the most successful electronic and multimedia "publishing" ventures are very specialized with content and form well suited to the new technologies.

Some observers of American higher education have forecast a fundamental revolution, inspired by technology, in the organization of, and access to, information. Richard Lanham, a retired UCLA English professor, believes that the computer "is smashing the ordered, rational requirements [of] Western scholarship...epitomized in the printed book" (Wilson, 1994b, p. A22). Lanham and others foresee a new way that college students will learn and think. It is possible that information technologies will reinforce the importance of the written (although not always printed) word, and that the "life of the mind as pursued in the arts and letters . . .[will] be reaffirmed and enriched" (p. A22).

Before considering the practice of reading in the undergraduate culture, what do the preceding references contribute to the determination of the place of the book in collegiate life and learning today? This
author suggests that the book in printed form has already been joined by various textual alternatives to the printed word. Campus information networks provide easy access to electronic media (audio, video, and data) at a growing number of colleges. College libraries, formerly centers for the (printed) book, have been transformed in a matter of only a few years into information service centers. However, at the center of the library's purpose remains the book (in all its forms). The professional responsibilities for the acquisition, organization, preservation, and distribution of information continue, in my opinion, as the college library's central mission.

Literacy and the Undergraduate

Kaestle et al. (p. 150) describe a well informed "reading elite" who are at the top of the Western literacy hierarchy. Members of an expanding "aliterate" group who can read but depend by choice on the media for information and entertainment feel that reading is beneath them. At the bottom of this hierarchy are the poorly educated and uninformed "functional illiterates." Undoubtedly, a formal liberal education is intended to prepare graduates to join the ranks of the "reading elite." Unfortunately, a by-product of the technology revolution has been the keener realization that a literacy hierarchy already exists. The college faculty confronts the annual reality of first-year college students who (in increasing numbers) are aliterate. The turn to electronic technologies (particularly multimedia) as college teaching tools may positively enhance undergraduate learning, but I agree with Lynn McKell (Brigham Young University) that "students must analyze printed ideas, and synthesize through written and oral expression and unstructured problem solving. Lacking this [the new technology], it's just TV, at its worst, all over again" (Hofstetter, 1994, p. 6).

The compelling attraction of the new communications technologies is forcefully confirmed by Hofstetter (1994): "People retain only twenty percent of what they see and thirty percent of what they hear. But they remember fifty percent of what they see and hear, and as much as eighty percent of what they see, hear, and do simultaneously" (p. 7). This message has not been lost on undergraduate educators. College teaching has experienced more than two decades of continually advancing instructional uses of nonprint media. Academic libraries, in the same period, have acquired and encouraged the use of an expanding variety of nonprint and electronic media.

The implementation of these new information technologies provides students with the ready means to attain a common contextual framework in various subject areas; I doubt that the depth of understanding attainable from critical reading would also be assured by technology. The common contextual understanding will still be acquired through extensive reading and discussion of the literature. It is specifically the lack of this
common cultural context and understanding in college classrooms (pro-
vided to a print-based society through books and other written commu-
nication) which I believe is the most tangible indicator of the place of books
in the academic lives of undergraduates today.

READING AND A LIBERAL EDUCATION

Reading, according to Birkerts (1994), is a deliberate undertaking,
requiring an entire set of constraints and obligations. Although a book
always imposes an order for its contents—an order conceived by the
writer—the reader may still use an infinite number of subterfuges to read
between the lines to subvert the lessons imposed.

The literacy associated with reading books in the college experience
may be reinforced by a "multimedia literacy" which makes reading dy-
namic. Far from ignoring text (words), multimedia expand the text "by
bringing it to life with sound, pictures, music, and video" (Hofstetter,
1994, p. 7). Furthermore, the linear indexing of the printed book is
replaced and enhanced by multimedia's automatic searching capacities,
referring the reader to internal contents of the title and to other linked
electronic documents. Multimedia, potentially, offers compelling sup-
port rather than competition for reading in future undergraduate
education.

Multimedia is already changing how newspapers are read. Hofstetter
reports that ClariNews, an electronic newspaper, delivers not only text,
but also graphics, audio, and video and already boasts more than 40,000
related customized onscreen service called PersonalJournal are also avail-
able. Other newspapers, including USA Today, The Washington Post, The
Washington Times, and The Los Angeles Times, offer online editions.

I believe that reading will continue to be of fundamental importance
in undergraduate education and the most critical skill of lifelong learn-
ers. Academic libraries, in collaboration with faculty, must increase their
efforts to encourage the integration of critical thinking in the curricu-

The idea that this next generation is going to start at page 1 and go
to page 284 and then close the book is wrong. This is a
generation...raised on...multimedia stimuli. They don't think lin-
early; they think mosaically. And they're much more used to getting
their information from talking and listening than from reading
books. (Lyall, 1991, p. 20)

Reinforcing this observation is the following statement by Allan Bloom
(1987): "[O]ur students have lost the practice of and taste for reading.
They have not learned how to read, nor do they have the expectation of
delight or improvement from reading" (p. 62).
These observations by Kirshbaum and Bloom are troubling. They suggest that an increasing proportion of adults, including some of today's college students, find reading in breadth and depth to be beyond their capacities for tolerance, much less enlightenment and satisfaction. College teaching increasingly uses electronic technology to bridge the growing gap between an aliterate population of undergraduates and an ever-expanding knowledge base.

Kirshbaum's sobering observation, therefore, provides a challenge to all who participate in undergraduate education. The printed book will likely continue to be at the center of a college student's education, but the "locus of important intellectual communication" will embrace not only books but multimedia; herein lies the territory for a refocused and revitalized mission for college libraries of the future.

REFERENCES

Information Literacy and the Undergraduate Curriculum

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ABSTRACT
For more than forty years, academic librarians have been concerned with integrating library instruction and information literacy into the undergraduate curriculum. Their efforts have brought some successes, but overall their struggle continues. Technological developments, educational reforms, and concern with preparation for success in the Information Age are beginning to enable academic librarians to once again integrate information and technological skills instruction into the undergraduate curriculum.

BACKGROUND
Almost forty years have passed since Knapp (1958) of the Monteith College at Wayne State University in Detroit, Michigan, stated: "If we wish the library to function more effectively in the college . . . we must direct our efforts toward the curriculum, working through the faculty" (p. 831). This sentiment has been echoed by numerous leaders in the library profession over the years and has surfaced to a much greater extent in the last few years as the information technology revolution has begun to manifest itself. Librarians have continually been concerned with students' library and information skills, with faculty attitudes toward the library, and with the importance of the library's involvement in curriculum development. For the purpose of this document, "curriculum" is defined as the structure of the educational process and the framework for planning educational experiences" (Regan, 1980). Educational processes and
experiences may be traditional; electronic, in an online environment; or remote, through distance education. Various studies during the past several decades have shown that the courses, not the students, are the determining factors in the degree to which a library contributes to the academic programs, specifically the curriculum. Students will obtain necessary library and information skills through appropriately planned coursework determined by faculty, their attitudes, and teaching methodology. Librarians' involvement in curriculum planning and cooperative teaching with faculty will help students develop important and vital information skills, and faculty will value such involvement (Pearson, 1978).

*Missions of the College Curriculum* (Carnegie Foundation for the Advancement of Teaching, 1977) gives definitions of general education and advocates teaching students necessary information-gathering skills. This report was used by many academic librarians in an attempt to integrate library instruction into the curriculum of their institutions. A good example of this at the time was Sangamon State University in Springfield, Illinois, an upper-level institution where librarians were equal partners with faculty in the instructional process.

Similar to other writers in the 1970s on librarians and the curriculum, Hauser (1979) wrote about the opportunities for librarians to become involved in curriculum planning whenever revisions of the curriculum are being made. This opportunity has existed throughout the 1980s and the 1990s.

One of the more famous, and certainly the longest surviving, example of a successfully integrated library instruction program has been at Earlham College in Richmond, Indiana, under the guidance of Farber. Another good example has been the University of Wisconsin-Parkside, which features the "teaching library," where library instruction was a required part of the general curriculum for students, and a test had to be passed to assess library skills before students could graduate. Many more institutions could be named where library instruction has been, and still is, a requirement, and where librarians have worked with faculty to integrate library instruction into the curriculum.

Several library instruction surveys throughout the 1980s indicate that successful integration of library and research skills instruction into the academic curriculum was rare. Whenever it did occur—e.g., at Earlham College—several special factors were present:

- library administrators had long-term commitments to integrate library instruction into the curriculum;
- librarians and faculty worked together in curriculum development; and
- the institution had a strong commitment to excellent educational outcomes for the students in the areas of critical thinking, problem-solving, and information skills.
During the past two decades, librarians hoped that gaining faculty status would help them to be more successful in integrating library instruction into the curriculum while being viewed as partners in the educational and teaching process on campus. That hope was not fully realized in most academic institutions, although in some cases it did result in a much closer dynamic relationship between librarians and faculty in universities and community and private liberal arts colleges. The acquisition of faculty status certainly helped librarians attain membership on faculty committees, including, among others, curriculum-related committees. That accomplishment, combined with the continuous mandate to revise the general academic curriculum, enabled librarians to make some progress toward integrating library instruction modules into the curriculum in selected institutions.

In the 1980s, information technology began to have a major impact on libraries, librarians and, to some degree, higher education. Although libraries had begun to automate in the 1960s with the start of the Online Computer Library Center (OCLC), the second and third generation of library automation systems, combined with the beginnings of electronic information formats, resulted in an accelerated rate of change within academic libraries. The changes affected not only collection activities and library services but also how users access information and the type of skills needed to do it effectively and efficiently. As the availability of online databases grew and end-users needed special training, librarians became even more concerned about teaching students success in using libraries and information. An added wrinkle in this concern was the fact that many faculty also needed help and guidance in using electronic information formats but often did not want to admit it.

Information Literacy

Librarians have become increasingly more concerned about the need for people to gain information skills so that they can be successful in the Information Society. A special committee within the American Library Association, The Presidential Committee on Information Literacy, was created, and their report defines information literacy (American Library Association, 1989). Based on the concept that all people have the right to information to help them to be successful in an Information Society, the report states that: “To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. . . . Ultimately, information literate people are those who have learned how to learn” (p. 1). The report reiterates the importance of information literate people for business, citizenship, and levels of education. Especially noteworthy is the fact that the report provides an excellent rationale for academic librarians to integrate information literacy programs into the curriculum. Several of the report’s recommendations have already been implemented successfully:
The National Forum on Information Literacy, a coalition of more than fifty national associations, has been formed under the guidance of ALA. It promotes information literacy through programs, publications, and advocacy.

State Departments of Education are beginning to make information literacy a part of their overall curriculum guidelines.

Several higher education accrediting agencies have incorporated information literacy outcomes as part of the accrediting criteria for higher education institutions.

The last White House Conference on Library and Information Services included information literacy as a major concern.

Several research and demonstration projects have been started to assess the role of information management skills on academic performance.

Other recommendations are just beginning to be implemented:

- ensure that colleges, schools, and businesses pay special attention to their libraries' potentially important role as information centers and teachers of information skills;
- modify teacher education and performance to include information literacy concerns;
- integrate information literacy programs into higher education curricula.

Breivik and Gee (1989) reiterate the important role of the library in higher education reform; how librarians can involve themselves in reforming instruction, improving research products, enhancing community service, and assisting administrators in student recruitment and retention. They offer valuable guidelines for librarians and higher education administrators to integrate the teaching of information skills into the curriculum.

Bjorner (1991) provides additional definitions of information literacy and a possible curriculum model. In her summary of information literacy, the following characteristics emerge:

- anyone can become information literate;
- information literacy is action-oriented, it helps solve problems and make decisions;
- information skills are transferable from one discipline to another, from one task to another;
- information skills are needed for lifelong learning; and
- information literacy helps people handle information and new technologies.
Bjorner discusses various philosophies of curriculum development—discipline-based (found mostly in higher education), student-based (found in elementary schools), social-utilitarian-based (found in vocational training), and social reconstruction (found in religious or other strong ideological focused institutions). A model consisting of various competency-based teaching modules in a vocational-technical education environment is discussed, and a list of information competencies is suggested.

The library instruction literature is numerous and includes many descriptions of information literature case studies in academic settings. However, unlike the K-12 situation where information skills instruction and measurable outcomes are generally mandated by states and local governmental authorities, higher education has not yet embraced the concept of integrating information literacy instruction into the curriculum. Reasons for this include such factors as the faculty's control of the curriculum, individuality and autonomy of each institution regarding curriculum and educational outcomes, and the status of librarians within higher education. For many years academic librarians have worked to integrate library and information skills into the curriculum, and in several institutions they have been successful. At this time there is an interest within the California State University System to bring information literacy into the curriculum, and this may eventually be one way to ensure information skills acquisition as an important learning outcome of higher education.

Unfortunately, earlier successes have not lasted; a change in the curriculum, the departure of a faculty member, or time constraints within a particular course have often eliminated the integrated information/research skills module taught by librarians. Librarians continue to search for better ways to ensure that students gain necessary information, research, and technology skills.

MacAdam (1990) suggests that academic librarians:

- do their instruction of information literacy within the framework of technology;
- use models based upon students' understanding of life in general;
- help students understand the role of the library in the information world;
- expand their collaboration with faculty in building the curriculum;
- cooperate with school and public librarians and campus administrators; and
- establish model information literacy programs.

In the 1990s, several developments in education and technology are beginning to help academic librarians achieve new breakthroughs in integrating information and technology skills into the curriculum of their colleges and universities. As libraries become true electronic informa-
tion centers featuring multitask workstations which provide immediate access to information and scholarly publications worldwide, students and faculty are experiencing the need for new technology and information-handling skills. Many librarians are addressing these needs by teaching workshops and seminars for faculty on the Internet, the World Wide Web, homepage construction, and the ever-growing array of national and international databases. Faculty are beginning to restructure their courses and teaching methods to utilize networking capabilities and are starting to cooperate with librarians to include instruction in information-handling skills for students into appropriate courses. This is taking place, particularly, in academic institutions affected by new accrediting criteria (the Middle States, the Southern States, and the Western States).

The Middle States Association of Colleges and Schools (1990) has prepared criteria for outcome assessment in higher education which includes a section on Information Literacy. They want to measure the extent to which students have mastered the ability to retrieve and use information, especially in the general education programs. The following questions are part of the program review:

1. How many syllabi include library-based assignments?
2. What is the nature of those assignments?
3. Are they appropriate for the program and its students?
4. Do they show evidence of thought and creativity?
5. Do they promote active learning?
6. Do they take advantage of primary sources when appropriate?
7. Do they display a knowledge of the range of resources available to students at the institution?
8. Is there a sense that, as students progress from the beginning of the degree program to its conclusion, they are required to use increasingly complex library research skills (Middle States Association of Colleges and Schools, 1990, p. 18)?

These criteria support strongly the integration of information literacy modules into the undergraduate curriculum and provide librarians with a powerful rationale in their quest to become involved in the teaching/learning process to participate in the education of students for success in the Information Society.

A Practical Application

It is particularly urgent to teach information and technology skills to students in urban universities since many of them usually work while going to school, in many cases, full-time. Their work environment is usually business and industry where technology and information skills are important for success as employees. Other students arrive on the campus underprepared for academic work, and basic information and technology
skills will help them succeed in their coursework. At Cleveland State University (CSU), the basic curriculum was revised during the late 1980s and a final report issued in 1990. This report includes the following statement regarding Information Literacy:

The CSU University Library has made the commitment to initiate an Information Literacy program as an expansion of the present bibliographic instruction programs in which librarians, in cooperation with faculty, have been instructing students in using library materials. Through the information literacy program, students will be able to locate, evaluate, and use information more effectively to satisfy their information requirements. Librarians will work with all faculty members to include information literacy modules into appropriate courses, and to monitor students' progress in becoming information literate.

Each professor who proposes a course for the various areas within the basic curriculum has to fill out a form which includes a question on how the course will deal with information literacy in the field. Implementation of the revised curriculum has been slow due to budget constraints, but, since the 1993-94 academic year, all students are required to comply with the new requirements.

In order to prepare for the new information literacy instruction, CSU librarians prepared a brochure explaining the concept of information literacy, goals and objectives for the information literacy program, and a basic checklist for evaluating information. Librarians have also begun to experiment with various faculty members to develop the most effective way to teach basic information skills to the lower level undergraduates. A major concern at this time is the assessment of outcomes for all academic programs, including the basic curriculum, and librarians are developing criteria to measure information literacy outcomes. At the same time, the university is involved in a technology review process and a possible outcome will be requiring all students to demonstrate, at the time of graduation, that they have acquired appropriate technology and information skills. If this becomes reality, librarians will become even more involved in the teaching/learning process.

Involvement in the curriculum development process during the last seven years has been an educational, and often frustrating, experience and has shown that only hard work and persistence can lead to success. Here are some insights gained from this lengthy experience:

- it helps that the library director is an ex-officio member of the curriculum committee;
- librarians must understand the curriculum and have effective liaison relationships in collection building with faculty;
- support from administrators and faculty leaders is crucial;
- librarians must be well prepared for teaching, understand different learning styles, and engage students actively in the teaching process;
• librarians must be flexible to accommodate the range of the curriculum and disciplines, as well as a diversity of faculty and students;
• librarians must use effective marketing techniques to demonstrate the importance of information and technology literacy and their crucial role in it; and
• librarians must stay somewhat ahead of the technology developments so they can be the first to teach new information formats and networks.

CONCLUSION
These are challenging and exciting times for academic librarians. New technologies appear on a regular basis in the library and on the campus and affect every program and process. Educational reforms are taking place in all states to improve educational outcomes and to contain costs on all levels including higher education. These developments are causing much upheaval in the campus community and will lead to major changes. Curriculum reform is in process throughout the country, and students and employers are demanding improved educational outcomes to ensure better individual and business productivity. It is up to librarians to maximize their potential and to be in position to assume their role in the teaching and learning process as reforms take place. These opportunities are best summarized in the Middle States Association of Colleges and Schools (1994) Standards for Accreditation:

Each institution should foster optimal use of its learning resources through strategies designed to help students develop information literacy....It should encourage the use of a wide range of non-classroom resources for teaching and learning. It is essential to have an active and continuing program of library orientation and instruction in accessing information, developed collaboratively and supported actively by faculty, librarians, academic deans, and other information providers.

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As the Cursor Blinks: Electronic Scholarship and Undergraduates in the Library

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ABSTRACT
In the environment of electronic scholarship, the apprentice/journeymen/master tradition is still valuable. As master of the research process, academic librarians must be responsible for training students in research methods. The authors present a model of research that incorporates layers of personal and institutional inquiry the student must work through, layers that help students assimilate new formats and new tasks, expanding or even replacing established habits of critical thinking. By using the accumulated practitioner lore of library instruction and educational psychology, librarians can effectively redesign student work and reconfirm the unique role of the library.

INTRODUCTION
It has been a quiet spring. According to Terborgh in the May 1992 Scientific American, radar monitoring shows that 50 percent of the songbirds migrating north from the rain forest have disappeared since the 1960s. Costa Rica in the 1950s was 75 percent rain forest, but only 25 percent rain forest in 1990. Along the Maine section of the Appalachian Trail, the second-growth forest is being clear-cut, and all over the world amphibians are disappearing.

With the world in crisis, how can people be expected to use the library? The needs are so great, the calls to action so many and so urgent, how can one spend time in study? Librarians, in consternation, are realizing that these questions are no longer rhetorical, even on college
camps, because of the promise of “electronic scholarship,” the promise that each person will be able to use the computer to wander lonely as a cloud through fields of accurate and appropriate information. Then, armed with data, one would be able to take swift action on life’s issues. Librarians and faculty, however, are aware of the gap between promise and reality. Recognizing valid facts is not that simple; framing right action is downright difficult. Throwing water on a gasoline fire makes it spread; throwing large-scale development projects at third-world countries has not been such a good idea either.

Reasonable people can disagree on issues such as abortion or affirmative action; a grandmother’s adage, “in polite company, avoid discussing race, religion, or politics,” remains useful. The value system of the college, however, encourages discussion, encourages the search for solutions, and presents study as an active process, essential for any interaction with crisis. Facts, such as the litany of environmental impact figures above, mean nothing without personal inquiry and reflection; the well-prepared mind can, even in crisis, take right action.

Validation of study and of college education no longer automatically validates the college library; the value of the library to faculty and students is no longer a given. Academic librarians have been surprised by this. Just as, to a man with a hammer, every problem looks like a nail, to an academic librarian, the college library seems the source of solutions: do enough research, amass enough information, study it closely, and the truth shall set you free. The issue is greater than a question of whether the technology works (Crawford & Gorman, 1995). Add enough technology to the library, the librarians say, create the environment that nurtures electronic scholarship, and the role of the library is assured. The question really is, as it has always been, How does the mind work? And, then, How do librarians participate in preparing student minds? The validation of the academic library lies in the way the profession answers this last question.

The preparation of the student mind has been based on the academic premise that knowledge is cumulative, that both content and rigorous method can be taught, and that participants should retire from the world to do this. Our society identifies college and university faculty as experts, the intelligentsia, with a professional responsibility for not only knowing what is going on but also for determining right action (Havel, 1995; Richardson, 1995). Most colleges in the late twentieth century, in order to position their “experts” for influence in the world, have adopted the mantra:

- Change is Good.
- Change is Inevitable.
- Rush to keep up so that you can be a change maker, a leader.
The conflict for the faculty between the pressure to develop new knowledge and technologies and the need to reflect on the right course of action permeates every course. Faculty who recognize this tension are committed to teaching students to learn and then to act, to be part of a civil society where citizens interact to understand and move on common problems. For undergraduates who want to think clearly about the world, who want to participate effectively, training in the skills of locating and evaluating information is essential. The new environment of electronic scholarship is affecting the college, the civil process, and even social relationships.

The electronic dissemination of information is changing our culture, changing our definitions of what culture is. The word "culture" once referred primarily to nurturing activities, as in "agriculture," and was then extended to refer to the intellectual and artistic concerns of civilized (read "urban") and sophisticated people, people whose taste and activities were to be observed and emulated. As American museums, orchestras, and libraries were established and citizens were urged to become cultured, sociologists shifted the word to encompass socially transmitted behavior, as in "street-corner culture" and "corporate culture" (witness the rise of McDonald's as a place that both establishes American culture and provides a training ground for children to practice public social skills). Librarians who thought they were part of the (civic) culture's process for recording and using (intellectual) culture must now find a new place in the rapidly changing social patterns. A popular culture deeply in love with technology is replacing now quaint enlightenment notions of the "good person" (Lasch, 1991). Public ethics are replaced by efficacy; for example, note the debates at the recent UN Climate Control Conference, the Cairo World Population Conference, and the Rio Conference, where what needs to be done was replaced by what is politically acceptable. The fact that this tension between right and might is age-old does not diminish the reality of the dangers posed by the power of new technologies (Eco, 1995).

In the United States, citizens are exposed to a mind-smothering dust storm of sales messages, billboards, slogans, reminders, and sound bytes of news, estimated for New Yorkers, for instance, at 3,000 to a million per day (Nare, 1995). Undergraduates, having grown up with television and shopping malls, are inured to these messages whose sheer volume and lack of substance ("Just Do It," "Hi," "The Stuff Legends are Made Of") create a grainy daily backdrop of static and flash (Stoehr, 1994). In a similar way, as a part of this information culture, librarians, too, are inundated by messages promoting the consumer imperative, urging them to transfer scarce capital from collections to computers, to connections, to delivery on demand (Honan, 1994). Information becomes a product as subject to fashion and change as automobiles. Automated systems with a
three- to five-year shelf life result in search and presentation skills with a three- to five-year shelf life. The obsolescence of information held past its sell-by date, whether technical standards or literary theories, is promoted as the forgivable reality that accompanies any commodity. According to the consumer imperative as applied to information, one never has enough information, new enough information, enough time, enough genius, or enough state-of-the-art equipment to do the job. Whatever issue one investigates, it will never hold still or hold shape long enough for one to grasp its content and implications. Historians of the twentieth century commonly complain that, in American history since the Vietnam War, so many documents have been created on any major topic—the Gulf War or welfare, for instance—that no one will ever really know what happened. No wonder students protectively adopt the thick skin of boredom, or that librarians are alternately swept up in the excitement of developing new resources and exhausted by the automation hyperbole as fax and Internet become yet more sources of junk mail.

**APPRENTICE-JOURNEYMAN-MASTER**

No thing great is created suddenly, any more than a bunch of grapes or a fig. If you tell me that you desire a fig, I answer you that there must be time. Let it first blossom, then bear fruit, then ripen. (Epictetus in *Discourses*, Book 1, Chapter 2)

It is librarians, as information specialists, who understand that information—biologically, cognitively, and culturally—is much more than a commodity. We must articulate and defend this perception and teach both faculty and students the difference between information consumption and reflective scholarship. Scholars as well as students need to develop adequate filters for the data glut; librarians have the tools to teach others such critical skills. In the film *Black Robe*, which tells the story of the first Jesuit priests in sixteenth-century Canada, a priest is lost in the woods. The Hurons, finding him, ask: “Why didn't you look at the trees?” Librarians, watching the forest of information (or is it Kudzu vines?) sprouting all about them, must teach faculty and students how to map and evaluate the terrain.

Like lawyers and physicians, librarians are public professionals. We all work with individuals—clients, patients, or patrons—to address their unique needs and improve their condition. That, in itself, is a public good but, in addition, the experience gained from each intervention becomes part of the public professional knowledge base, part of the common wealth both practitioners and individuals may draw upon. This knowledge, amassed and organized and made available as theory and practice, is a public good. The process of learning to use this common wealth is well represented by the apprentice-journeyman-master craft tradition, a
tradition combining content, skill, and attitude that, especially in acade-
me, persists in our mechanized and electronic culture. As Giedion
(1948) observed in Mechanization Takes Command, the need for organized
living within the community has been filled in part by the social obliga-
tion of each citizen/participant to pass through these traditional stages
of training (p. 39). From apprentice to journeyman to (perhaps) master,
the process yields eminently qualified workers. The Progressives of the
early twentieth century saw that this process and wealth of professional
information could be made available as well to citizens who need to make
informed decisions. That is, there is an apprentice-journeyman-leader
process in civic life.

Whether college students are profession-oriented (accounting, engi-
neering) or liberal arts students, their involvement in library research
and learning the knowledge structure of their subjects is an apprentice-
ship. Here, electronic scholarship is more than a new tool for the cre-
ation and accumulation of public knowledge. The information technolo-
gies create opportunities we are forced to accept in our geographic, gov-
ernment, and scholarly communities (Allen, 1978; White, 1994; Winner,
1992). Students, as apprentices, learn how to listen in on shop talk, col-
laborate across continents, and contribute to databases. Their relation-
ship to both faculty and subject matter may indeed be less passive but
remains a tutorial relationship simply because only a subject master can
deal with such great amounts of raw data.

The apprenticeship of the undergraduate student is spent with the
master—i.e., the faculty member who is expert in the subject matter. The
librarian, however, is expert in the research process and can rightfully
assume responsibility for that area. The importance of this process was
vividly brought home to one of the authors whose one-credit research
course had been required for mortuary science students. Years later, one
graduate stopped the librarian on the street and commented that her
research course was the only course that had prepared him to deal with
matters as diverse as AIDS, the EPA, and zoning boards. All of these had
changed dramatically since he had graduated but were carefully docu-
mented in resources he could find at the library.

In the apprentice-journeyman-master culture, students at every level
need opportunities to apply concepts learned in class; they need to prac-
tice with the materials and methods of the discipline. Because accredit-
ing agencies understand this, college curricula are full of practicums, co-
op study programs, laboratories, portfolios, and class presentations. The
very crush of information available gives librarians new opportunities to
work with faculty to build research assignments into every course, assign-
ments not necessarily expressed as "5-7 pages on any topic." The tradi-
tional term paper is only part of the mix, merely one format for demon-
strating a student's skills and not well-loved by students or faculty. New
free-ranging assignments encourage contact with scholars and leaders in the field, allowing for the serendipity of the search and the exploration of personal enthusiasms. They guide students to the information sources of real-world decision-making (statistics, slogans, polls, etc.) and set standards for scholarship and presentation. Most significantly, these assignments deliberately give students opportunities to practice using standards of critical thinking and source evaluation in applications that matter. These assignments, examples of which are included at the end of this article, require the use of primary documents, professional journals, and electronic sources, as well as imagination, reflection, and other creative processes.

INFORMATION AND KNOWLEDGE

The information environment has become so vast that information as a substance becomes analogous to water, air, space (Smiley, 1995, p. 137). Whatever one needs is easily available; it does not seem to matter what one puts into the volume (sewage, smoke, trash), and one pays little daily attention to its nurture. To use one of the current academic metaphors, our students are in a gathering rather than a hunting mode when it comes to information (Quinn, 1992). Like wind and waves, the information keeps flowing by. One can let experts deal with the stew of data; one can leave scholars to sift the sands of trivia. The coarse, the foolish, the unreliable, the malevolent, the beautiful, and the useful are all mixed up together in conversation, on the Internet, in magazines, on television. The myth is that Gresham's Law (bad money drives out good) does not apply to information. The assumption is that current information is wanted (Wilson, 1993), so that old information becomes as polluting as wrong information. Experienced librarians know that this is not the case; people will eventually settle for what is there even if it is not precise or up to date. As for locating information, the folklore of online and Internet searching suggests that any search word will do; that one no longer needs structured thinking, taxonomies, charts, chains of logical implications, or grouped sequences, a list of sources, or even an experienced guide. The parallel myth is that without the ubiquitous indexer's interference, one can freely connect to the world of data.

If information is so abundantly and cheaply available, what then is the value of research expertise? Students are unsure whether research (or life) is a process of getting the one right answer someone else may already know or a process of settling for a good enough answer. Learning the balance between the two has always been an essential part of any apprenticeship. Yet the mental processes turn out to be as important as the content and eventually lead to the journeyman's confidence in a third possibility: there are always new answers to be created, and research (and life) can add to the common good (Drucker, 1992). That exhilarating

In the past, as information formats and intellectual work changed dramatically, much anxiety surfaced. Socrates bemoaned the move from oral to written culture because the thinker no longer needed to be present; one could read the manuscript at any time. The arts of debate, rhetoric, and discourse would not be exercised; one could not argue with an author who was not present (the word “author” comes from the Latin “to create” but is used for the creation of the written word, conveying the impact of writing on credibility, that is authority). The rapid supplanting of script by the printing press provoked similar critiques on what would be lost: Trithemius (1462-1516) in De Laude Scriptorum (In Praise of Scribes) held that the art of writing and the care of conveyance of thought would suffer. As our culture now passes into a digital communication era, Birkerts (1994) sees “deep reading” as a necessary loss in the electronic age. Purves (1990) explores the parallel cultures co-existing today in his depiction of a scribal society in an information age: the issues of accuracy, definitiveness of text, and prevalence of information over knowledge are explored. Norman (1993), in contrast with those who anticipate the loss of significant skills, attitudes, and social conditions (Brod, 1984; Chomsky, 1989; Schmookler, 1986; Winner, 1992), sees the anxiety as focused on the necessary human values it is indeed possible to maintain by rigorously treating the computers as tools—“things that make us smart.” Twenty years ago, mediated (audiovisual) instruction was touted with much the same language that advance men use today for telecommunications. Parallel ing that, educators, psychologists, and librarians have argued quite convincingly that our students no longer know how to think, how to process information logically, or how to verbalize and organize inchoate thoughts; as a result, they do not know how to learn (Resnick, 1987).

Unfortunately, the library profession seems more concerned with the manipulation of data than with knowledge. Library schools are changing their names and curricula to reflect these new trends in the information business. While many are now Schools of Information Science, not one is a School of Knowledge or Wisdom. While the library school curriculum requires online skills that quickly become obsolete, it does not require, for instance, cultural anthropology as a prerequisite for collection development. Postman (1992), in his book Technopoly, describes our culture of technology as promoted by a market economy. We are confronted with new approaches to knowledge as well as challenging assumptions about what knowledge is; what value knowledge has; and how it can best be transmitted, recorded, and applied. The
technology-driven culture currently celebrated (Negroponte, 1995), as well as gloomily depicted (Birkerts, 1994), and reluctantly rethought (Drucker, 1993; Stoll, 1995) presents librarians and the profession with rapidly changing options for participation, leadership, or marginalization (Price, 1991). Whatever role college librarians choose to play, they must involve college students in the debates surrounding electronic scholarship (Bruner, 1986). Students must be prepared to become bridges between the old and new cultures, not as antiquarians, perhaps not as visionaries, but as people committed to saving and having the best of both worlds.

**Electronic Scholarship**

New situations have hidden possibilities, often not seen until an innovation is diffused and widely adopted (Rogers, 1983). With writing, disputation and analysis can continue long after an author is dead. Once the existing script books had all been printed, there was demand and opportunity to write new ones, including novels and newspapers. As with the current electronic scholarship revolution, with each information innovation, intellectual productivity increased (Drucker, 1993). The expert/scholar residues left in publications or on the Internet are like tea leaves one can use in any age to predict the future. The diffusion of communication across the Internet has led to World Wide Web (WWW) publications from unexpectedly diverse authors: from fifth graders (GrandRiver Elementary School: http://web.cal.msue.edu/JRSI/GR/BradClass) to refereed electronic journals (Psycoloquy, for example). These resource allocations of both capital and effort to electronic scholarship can affect which theoretical problems are studied, which methodologies are used, and how the research comes out. The traditional linear model of education has great power and, used in conjunction with the Internet, great connectivity as scholars are able to focus on narrow interests and browse across disciplines. Because one cannot always know how information will be useful, students should be encouraged to rummage, something that is well suited to computers. However, in libraries, the "just-in-case" model of collection development has given way to the "just-in-time" model, which assumes that when we need the information, it will be available. This is akin to the hubris of assuming that a cure for cancer will arise from spending enough time and money and scheduling the discovery.

This vision of the shifting of work from page to screen may seem Panglossian when one considers the array of skills needed to use the technologies and the resulting time-consuming learning curve. To take advantage of what automation offers, the student must learn multiple computer literacies in order to:

- generate classes of data to be examined;
• extend the search vocabulary;
• use a search profile to do the searching;
• sort through the masses of data to determine what is/is not relevant information;
• save the search histories;
• compile citations without laborious typing or writing; and
• record the information trails (McClure, 1994).

All of the above options for changing the way a student works with automation are new in this decade, although they are extensions of previously existing recommended search methods. Students have universally adopted and extended new ways of sorting through data by applying other technologies, hard and soft. Undergraduates no longer “take notes”; they use markers to “highlight” photocopied documents. Time spent gathering data is compressed when students download abstracts or save files to a directory. Time required to present information is compressed through word processing used to create new textual relations, to experiment with sequence, style, and impact of format. Yet human information processing cannot be similarly compressed.

The innovations involved in electronic scholarship present expansive opportunities and severe limitations, although the limitations are not visible in OCLC's recently posted definitions in their WWW advertisement for its services (see Figure 1).

Kevin Blandy and Carol Libuti

New Electronic Scholarship

1. the application of the digital electronic computer and telecommunications networking to study, instruction, research, and experience: Scholarship
2. to use electronic means to find specific information from a large body of information: Research
3. a student's work or activity done on a computer or computer network: Homework
4. the process by which an author prepares a work for publication: Writing
5. the digital version of a printed book or serial: Electronic Journal
6. organizing, storing, and providing access to information and knowledge in electronic form: Electronic Library
7. electronic communication over the Internet and World Wide Web (WWW): Information Superhighway
8. a way of life, syn. see Scholarship

Figure 1. New electronic scholarship
Electronic scholarship, as outlined in figure 1, refers to methods of work which have developed over a period of time; the seamless integration of different components of scholarly work is what is promised in the rhetoric.

The language used in the advertisement mirrors our assumptions about what the undergraduate now faces. The belief that all is digitized and available—and instantly so—is incompatible with conditions in which undergraduates are truly educated, that is, "led into" one’s own inquiry (Carr, 1988). Although finding relevant information is likely to be speeded up by automation, the necessary conditions of reflection, making sense, and building mental constructs take time. Guthrie and Dreher (1990) measured several salient factors in information searching: category selection, extraction efficiency, integration, and quality of sequence. These factors involved students’ repeated examination of information as they constructed an essay. Cooper’s (1985) framework for integrative research reviews focuses on a chronological sequence in which literature review is conceptualized as a primary scientific process. Iterative cycles are not a prominent part of this framework. In contrast, Cavaliere’s (1991, 1992) analysis of the Wright brothers’ methods supports the idea that information construction is a cyclical process maintained by episodic patterns. Her learning behavior framework provides for both the chronological and cyclical nature of individual inquiry. The visualization of the connected patterns of people, events, ideas, and opportunities that were interwoven in the Wright brothers’ airplane (Cavaliere, 1991) captures the loops, dead-ends, unexpected links, and downright leaps of faith that are integral to human research.

Giving undergraduates the opportunities to experience cyclical and episodic patterns is difficult in many presently existing learning environments due to constraints on time for the task and on attention available from mentors. The computer has been seen as surrogate mentor, compressor of task time, and a tool for the construction of ideas (Lajoie & Derry, 1993). Prior to the automation of the major library tools, scholars spent more time on tedious labor than conceptual work. The nature of thought involved in tracing citations, recording them, going to other libraries and collections, locating relevant materials, typing drafts, etc., would be at the lower end of Bloom’s Taxonomy. The computer is essentially a sorting machine, capable of speeding up such work and theoretically freeing up valuable thinking time for the student to use higher-order thinking skills (analysis, synthesis, and evaluation) in the pursuit of individual inquiry (Anderson & Sosniak, 1994).

Commonly, problem-solving as taught in college courses is actually knowledge transfer. Faculty ask a question or pose a problem which has a right answer, a known answer toward which the students work in laboratory experiments or essays. This directed search demonstrates concepts
rather as a concert demonstrates music, but it is not the same thing as real-world manipulation of concepts learned in class (Sawrey, 1990). The apprentice has not become the journeyman. To complicate this, the goals of everyday life are not the same as the goals of science (Reif, 1991), of social sciences and humanities (Bruner, 1986), or of the professions (Resnick, 1987). College students need to learn how to make inferences within the parameters of the discipline; how that information is constructed, validated, and organized (Lewontin, 1995); and how to think about thinking (metacognition) as a method for understanding nonlinear thought (Dijkstra, 1991; Greene, 1995; Martin, 1981). As one student said: "Life ain't as if"; if students do not master these higher-order thinking skills, they will always be at the mercy of intellectuals or swindlers with the all-embracing "right answer" (Havel, 1995).

Martin (1981) comments in her article, "A Garbage Can Model of the Psychological Research Process," that it would be useful for students to comprehend a research model that accurately describes the gap between the rational model seen in their texts and the anarchic model subject to dead-ends, serendipity, and hunches that more often prevails (for examples, see McDonald, 1995; Wallerstein & Blakeslee, 1989). The myth that results are an end-point rather than a beginning point or a never-reached point could be more easily dispelled as well as could the myth that a once-read text has nothing more to offer.

UNDERGRADUATES IN THE LIBRARY

Today's undergraduates face often staggering tuition costs in a college environment in which an increasingly diverse student body is being educated with decreasing resources ever more thinly spread. One of these that stands out primarily because of its absence is the personal encounter with the faculty (Richardson, 1995). In a study done by the Higher Education Research Institute, fewer than 50 percent of the undergraduates at public research universities were satisfied with their contact with professors and administrators. Private research universities fared better; 64.2 percent of students surveyed reported satisfaction. Private four-year colleges, however, had a 75.4 percent contact satisfaction report. Some institutions, such as Syracuse University, have even found it necessary to restate their commitment to a student-centered, rather than a research-centered, environment. It is highly likely that, unless at a college where faculty put a priority on teaching over research, an undergraduate faces large classes, perhaps taught by graduate students, and has little if any opportunity for individual discussion and debate with scholars.

To make matters worse, the above-noted increasing diversity includes disturbing variables in students' readiness for college-level work. Recent national testing of high school seniors' reading proficiency indicated that only one-third of high school seniors are proficient readers ("Decline
Found in Reading Proficiency of High School Seniors,” 1995, A18). The items for testing included: two texts about the Battle of Shiloh (a journal entry by a Union officer and an encyclopedia article), the 1040 Federal Income Tax short form, and an article on sperm whales. “Advanced readers” (4 percent of the total) were those who could describe abstract themes and analyze meaning and form. “Proficient readers” (30 percent of the total) were able to draw conclusions from essays and analyze literary devices. “Basic readers” were defined by their capacities to understand the text and make interpretations. The undergraduate in the 66 percentile who can merely read on a basic level will surely have trouble with information functionality.

Undergraduates encounter librarians primarily in person in the face-to-face reference situation where the librarian is expected to address these issues of infrequent faculty contact and weak academic skills. It is the librarians who may take over as coaches and guides through the thorny process of creating a researched report. It is the librarians who must infer a great deal about the student’s ability from evidence such as body language, blank monitor screens, and huge piles of paper, while the student faces confusion that goes far beyond correct button pushing or logical search strategies. Undergraduates often have difficulty assessing resources for accuracy. They may be warned by caveat emptors accompanying the publisher’s statement or by librarian-created on-screen warnings such as those taken from a large university's terminal display (see Figure 2).

---

This program will attempt to connect you to various information sources via the Internet.

Some services may not be available at all times.

THE SERVICES OFFERED ARE CREATED AND MAINTAINED BY VARIOUS ORGANIZATIONS AND INDIVIDUALS.

UNIVERSITY LIBRARIES CANNOT GUARANTEE THE ACCURACY OF INFORMATION PROVIDED BY THESE SOURCES.

please wait...

Figure 2. Typical example of on-screen warning
In "real life," the rules for locating and using information are becoming ever more elaborate, requiring even ordinary mortals to carry increasing mental baggage. For the student, the complexity of the library is just one more cognitive burden, involving barely understood choices—which library, which format, which terms, which sources—while estimating and re-estimating the time, costs, and value of the results. For students using a variety of online databases, it is as though they were parking lot attendants, where every vehicle is not only a different make and model but has a different configuration—e.g., the three pedals on the floor change function with each car. The procedures for using the databases are so complex that there are whole volumes of documentation at the BRS, ERIC, or OCLC terminals dedicated to helping users search. Meanwhile, at the old familiar Readers' Guide and New York Times Index, instructions require one page; those for the international telephone system take only fifty pages of the telephone book.

Kuhlman (1994) discusses psychological disequilibrium as a necessary aspect of development in the assimilation of new structures of thinking. Two considerations that are commonly part of a learner's disequilibrium in an instant-data universe are the loss of the practice of reflection and the loss of skill in evaluating evidence. Without in-depth involvement and faculty insistence, students may rely even more on packaged reviews, abstracts, and what is available, further short-changing themselves of the real work of scholarship. The combined authority of the computer and the printed word seems to students unassailable; they hurry on, accepting the predigested information because, as automation transforms the culture into its own image, the whole world seems to be in a hurry. Librarians need to be aware that values are being communicated. The computer can be used to personalize access to information, thereby enhancing the student's own reality, or it may become part of the disembodiment of intellect that also occurs on the Internet.

Layers of Learning

Despite librarians' improved teaching expertise in developing motivation; dealing with diverse student needs; and creating materials, assessments, and delivery methods, the purpose of instruction, until recently, has remained the same: teaching students to navigate a "library layer" (bibliographic skills) to reach a "scholarly layer." Since the 1980s, this library layer has been supported by a "technology layer" (electronic applications for searching, accessing, and evaluating information). These technologies extend the environment for learning beyond classroom, laboratory, and library and beyond the limits of time frames (Fox et al., 1995). Today's undergraduates need, unlike earlier generations, specific competencies in all four layers of learning (inquiry, library, technology, scholarly) in order to become truly literate (see Figure 3)
<table>
<thead>
<tr>
<th><strong>INQUIRY LAYER: the student</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can recognize the need for information</td>
</tr>
<tr>
<td>Can conceptualize questions</td>
</tr>
<tr>
<td>Has the ability to extend questions into language</td>
</tr>
<tr>
<td>Has the ability to individualize an inquiry and direct it appropriately</td>
</tr>
<tr>
<td>Has the inclination to re-articulate inquiry in the light of information</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>LIBRARY LAYER: the student</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the ability to describe own information need</td>
</tr>
<tr>
<td>Recognizes and applies the classification of information used in the information environment, whether it be a physical setting or a database</td>
</tr>
<tr>
<td>Recognizes format distinctions</td>
</tr>
<tr>
<td>Has knowledge of and can apply location descriptions</td>
</tr>
<tr>
<td>Can navigate the environment from citation to access</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TECHNOLOGY LAYER: the student</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can translate own question into search structure</td>
</tr>
<tr>
<td>Has awareness of and can apply accurately search protocol for particular database</td>
</tr>
<tr>
<td>Has multiple computer literacies</td>
</tr>
<tr>
<td>Can decode electronic text</td>
</tr>
<tr>
<td>Can operate computer and peripherals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SCHOLARLY LAYER: the student</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can recognize data and transform it into information</td>
</tr>
<tr>
<td>Can have a “dialogue” with a represented point of view (whether in print or in person)</td>
</tr>
<tr>
<td>Has demonstrated skill in communicating discoveries, findings, to identified audience</td>
</tr>
<tr>
<td>Can reflect on diverse points of view, holding onto ambiguity and tension while examining evidence</td>
</tr>
<tr>
<td>Has skill in developing an individual viewpoint, relationship with the literature</td>
</tr>
<tr>
<td>Has skill in examining individual pieces of literature and developing a pattern of inquiry across all literature examined on a topic</td>
</tr>
<tr>
<td>Has developed metacognitive strategies to regulate learning, searching, and production of information.</td>
</tr>
</tbody>
</table>

Figure 3. Layers of learning in research in an electronic environment: Undergraduate competencies

The addition of the technology layer to skills required for searching has narrowed the focus of library instruction almost exclusively to the use of technology. While the recent library instruction literature has focused
on the library layer and the technology layer, the undergraduate actually needs more focus on the inquiry layer and the scholarly layer. These two layers form the most permanent competencies and those that best teach and require levels of formal reasoning. The two "sandwich" layers (library and technology) will likely become more transparent over time because of rapid improvements in the design of search and access technology (Marchionini & Maurer, 1995). It is the librarians' task to push the students further along the Piagetian cognitive spiral. Many researchers have articulated these four competencies to different constituencies, usually in isolation from each other but with similar language (Clandinin & Connelly, 1992; Lajoie & Derry, 1993; Mann, 1993; McClure, 1994; American Association of School Librarians and Association of Educational Communication and Technology, 1988; ACRL, 1992).

What separates or integrates these layers of learning depends on the faculty, the librarians, and the students. Ideally, all four components are deliberately combined, even specified, in the independent research assignments so that the "need to know" is established for all and becomes a joint venture. The librarian as class instructor explains the library and technology layers as they support the scholarly layer. The undergraduate, in response, is expected to develop the inquiry layer. The resulting synergy in instruction is based on both librarian and faculty expertise. What is new for all is the constantly changing technology layer and its benefits; these threaten to absorb energy and overshadow the more critical layers. This persistent reformulating drives new everyday, temporary decisions on what students need to know: how much, in what sequence, with what materials, to what goals. Institutions should continue their education reform efforts by implementing an integration of the layers of learning needed for scholars to function in an electronic environment (Martin, 1993; Scheingold, 1991).

Librarians are increasingly challenged to maintain the learner-centered tradition of the library and still convey the exacting standards of the inquiry and scholarly layers so that students can make the best use of electronic scholarship. Specifically, in the electronic environment, librarians should act to preserve the research behaviors that apply regardless of information format, promoting those traditions of the best scholarship that help the student-apprentice understand just what is "good enough." Librarians can contribute to the undergraduate experience by creating opportunities for:

- individual inquiry;
- development of new perceptual and motor skills;
- episodic and cyclic learning, including time for reflection;
- evaluation of collected information;
- recognition of feelings as part of the process;
- collaboration with faculty and students.
INDIVIDUAL INQUIRY

Every regional academic accrediting association includes in its standards some variation of the requirement that, for a course to be considered college level, it must require students to demonstrate independent use of concepts taught in class. The individual inquiry pattern a student develops in the process of completing a well-designed assignment can often be learned through the library.

DEVELOPMENT OF NEW SKILLS

The librarian's eye has been trained, almost subliminally, to respond to electronic text (Costanzo, 1988; Kerr, 1990). Reading electronic text on a computer monitor involves knowing that the text will "go away." Reading display screens involves recognition of nonstandard sequence: the "hot spots" or instructions do not necessarily read from left to right, top to bottom. Further, the electronic texts in databases may differ significantly from each other. These features are routinely anticipated by the experienced librarian familiar with many databases. Librarians' "information filters" are built as patterns, perhaps by deliberation, perhaps by repetition. The motor skills needed to use databases have also been built by practice into habitual patterns: manipulating electronic text; clicking on WWW sites; anticipating the location of instructions; and moving one's eyes to the bottom, side, or top of a screen. Recognizing what transformation each librarian has personally gone through in the process of learning to use the technology is a value in itself and a basis for designing learning activities.

EPISODIC AND CYCLIC LEARNING

Good research is seldom completed in one setting nor can it be taught or mastered in one class. Students often need to learn that the research process involves many cycles of collecting, evaluating, and applying information. Librarians need to encourage students to return to the reference desk as their work proceeds so that the project can blossom in ways the students might not foresee. Just as the student needs time to reflect on the process and the gathered information, the librarian needs time to reflect on the student and the developing project, bringing to the interaction an appreciation for what the student is learning and for how the research "works." Some recent practical examples of what librarians need to know about students include: understanding with fresh eyes what learners really see on the screen (Kerr, 1990; Kulthau, 1991; Weiss, 1994); knowing how one learns to use a system (Weiss, 1994); recognizing that research of any substance is a struggle (Kuhlman, 1994); and assessing the impact of new formats on search patterns and the determination of the validity of information (Campbell, 1989; Manes, 1995).
Evaluation of Information

Evaluation is essential in inquiry and scholarship, but to the extent that skill in assessing the reliability of any source is a function of age and experience, undergraduates are unprepared to appreciate the importance of evaluation. They have picked up from the culture a large semi-faith in the printed word and much faith in the online report. Students have accused our libraries of "hiding the truth" from them when there was virtually no documentation of what right-wing radio calls the New World Order. "If Robert McNamara can now admit he was wrong about the Vietnam War, then, by analogy," the student says, "there is a plot to keep this information from us." Finding the information they want on the Internet, they are often unwilling to subject it to the canons of scholarship.

The challenge of instructional use of the packaged information product is described by Manes (1995) in his review of an art compact disc:

"Since text is not searchable, there is no way to know, say, that a mysterious passing reference to the Nabis group is clarified in great detail in Bonnard's biography. An initially impressive time line ends up seemingly awkward, with snippets of political history here, literary history there. No catalogue raisonné has been developed for the Barnes collection, but here there is not even an overview of its holdings. But all these quibbles vanish as you fall under the spell of the glorious images. (p. C8)"

Not necessarily. Librarians tend not to fall under the spell of images as they contemplate information products, since undergraduates may not know the difference between errors of commission and omission of information.

Students skilled in in-depth reading will be concerned with authentication of sources, including disembodied fragments, miscopied/edited texts, omissions, and all the sins electronic texts are heir to. The deep reading of text should transfer to deeper reading of objects and actions so that students see extended meanings in ordinary things (why would anyone patch a cook pot? a dishtowel? a sock?) and the extent to which information is understood to be embedded in these things. As DNA and RNA are embedded in cells, so are the manufacturing processes embedded in the refrigerator and the political processes in the drinking water at the faucet.

Recognition of Feelings

Computers may not have feelings but people do and, because information and automation have been so appropriated by the preachers of progress, people new to research and new to computers face emotions ranging from exhilaration to fear and resentment. Most librarians have likely faced similar anxieties when confronted with new technologies, usually on the job, with little time to master these skills in the context of
personal inquiry. Current research on the most effective ways computers can emulate human tutors suggests that the expert human tutor does not follow instructional design processes; the tutor attends predominantly to affective states of the student (Lepper et al., 1993). The affective component is seen as driving information-seeking behavior by psychologists interested in the whole research process (Kulthau, 1991). With electronic resources, the variety of undergraduates that encounter computers can range from the eighteen-year-old who grew up with Nintendo and computers in the classroom (Sendov & Stanchev, 1986) to the middle-aged student, now very motivated but with minimal computer experience. The librarian/instructor cannot afford to assume that a learner will know how to read that screen or operate the system (Teaching and Technology, 1991), nor can the librarian assume that a systematic method of reviewing literature has been part of a student's past experience. It has been said of Leonard Bernstein that he was a great teacher because he did not assume you knew what a fugue was nor did you feel inferior because you did not know. Students particularly need help dealing with feelings about time: how much time research really takes, how much time to spend searching any one source using any one strategy before giving up, how long to wait for an interlibrary loan or a blinking cursor.

Collaboration with Others

Librarians need to recognize that they have the power to create opportunities for students, faculty, and themselves to work together within the research process. Students can be encouraged by well-designed assignments to collaborate with each other, seek out faculty members, and reflect on the larger-world ramifications of their studies. Faculty cannot only be wooed by librarians promoting new resources but can also be involved in the design of library-intensive projects. Indeed, without faculty participation, students will seldom use the library.

Assignment Design

Both classroom faculty and librarians agree that undergraduates need learning experiences from which solutions and patterns can be generalized across disciplines for lifelong application (American Library Association, 1989; Breivik & Gee, 1989). The educated person will be one who generates new patterns of inquiry, applications, and networks in new situations (Drucker, 1993). Novak and Gowin (1984) describe the kinds of knowledge that will be essential for lifelong learning in their book Learning How to Learn. The very title of the book could be seen as the essential purpose of all library instruction. "Learning how to learn," however has, for many librarians faced with severe time constraints and many undergraduate classes, crystallized into a curriculum that could be described as "cracking the code." If one-shot information-dense classes
can be replaced by learning environments in which an undergraduate has the time to learn, the librarian's extensive experience with all layers of the research process may be channeled into instruction.

The faculty member, faced with demands for greater productivity, is also weary confronting hundreds of traditional term papers to be graded. Librarians and faculty, collaborating on project design, can sift through the standard criteria and pick out those elements the faculty want to emphasize through the project so that it blends into the coursework. The teaching literature, whether library science or academic, is, of course, full of "how we done good" examples and ideas, as are the teachers' manuals that accompany the textbooks. In addition, LOEX and ALA regularly publish conference and poster sessions (e.g., see Harig et al., 1993). Some of the best ideas for assignments will be adaptations from other faculty projects, old faculty projects, and one's own college experience.

As the materials and methods available for library instruction multiply, the librarian is faced with ever more elaborate choices which must be grounded in knowledge of what students need to know in each particular discipline context (Campbell, 1989; Gratch, 1988; Harasim, 1990; Scheingold, 1991). These choices must be made in collaboration with the faculty based on shared experiences with the students. The lore and hype of data display, interactive video, hypermedia, primary documents, and portfolios need to be measured against clear descriptions and rationales for desired student behaviors (Lowry, 1990). A balance must be found between expectations for content and time restraints for instruction since "stuffit" so often becomes the paradigm: compressed time, compressed information, instant pudding-in-a-box. The librarian's responsibility is to teach research processes, not mechanized skills and, as difficult as it is, to evaluate the results of this intervention (Ackerson & Young, 1994; Flagg, 1990).

A large percentage of the literature on academic library instruction has borrowed, emulated, or reworked methods from the field of education (Edwards, 1994). The educator's knowledge base as practitioner includes classroom management, testing and measurement, content preparation, and a supervised student-teaching experience. The librarian's knowledge base in this area differs by a focus on the reference interview with one-on-one interaction, the organization and use of information, and networking skills. Although most library school programs include bibliographic instruction courses, there is little formal analysis of classroom management, differences in the kinds of teaching in the library and classroom, and basic distinctions in the interpersonal structures of the respective settings (Libutti & Gratch, 1995). Teaching faculty are concerned with "covering" and structuring content/data and therefore spend considerable time developing sequential experiences within their course syllabi. Librarians do the same but with differing emphases and constraints on time, evaluation, and content.
What is new here is what is actually new—electronic resources—and what is actually old reaffirming the apprentice-master process and the importance of the inquiry and scholarly metacognitive skills. Well-designed assignments will help students master library and research skills, require them to use higher-order thinking skills, and introduce them to current issues and materials in the discipline but always in the context of using the available technologies appropriately along the spectrum from interview and primary document to encyclopedia to Internet talk group. Exploring the variety of sources requires students to invest themselves—their effort, their time, and their perceptions—which leads to their ownership of the results. With a carefully sequenced and explicit assignment, students completing the work know for themselves whether they did it right, so that faculty, grading from the set of expectations, can work through the pile of papers very quickly, reserving their energy for incorporating report results into classroom discussion. Figure 4 illustrates the usually-not-linear progress from facts to a deep structure for the individual. Activities planned by faculty which focus on the apex of the knowledge/action triangle provide a student a chance to internalize the meanings of the research without the "right answer" dominating the resolution.

Argyris (1991) has stated that learning is not limited to problem-solving, formal or concrete. Instead, metacognition means, in the end, changing oneself rather than blaming externalities. In addition, an individual's preferences for search strategies are embedded in her culture and therefore have a multicultural dimension. Students have to confront their own construction of credibility, their own appreciation for diversity, precision, and ambiguity.

Library instruction, so often caught up in the specifics of each library, rarely emphasizes the layer of inquiry as the beginning point of an in-depth construction of knowledge. Although inquiry competencies are clearly within the tradition of research in education (Clandinin & Connelly, 1992), they also define the reference interaction. The library encourages the construction of self-directed learning on a scale not matched in any other learning environment. This student-centered approach has its best match in the open education/learning system (Rountree, 1994). The student is given parameters of inquiry, the environment is organized for many possible alternatives, and the teacher acts as coach/facilitator/research colleague. The public libraries of America have always been organized as open classrooms (Cheney, 1992); it is likely that the Internet will become the largest open classroom ever built.

Library instruction differs from course instruction, therefore, in both focus and organization. While the library instruction unit may indeed concentrate on one subject area and overlap the classroom experience, the purpose of undergraduate library instruction is to provide a structure for independent research, a structure which can be generalized across
content areas. Although college library instruction has taken many forms, it is, as an extension of the reference interview, maintaining the centuries-old tradition of the tutor (Lepper et al., 1993). This may explain why library instruction is so often justified by claiming that students, learning to do it themselves, will no longer need librarians’ help. This denigration of the importance of librarian-student interaction reflects an insecurity about the librarians’ role in the apprentice-journeyman-master process; librarians would benefit from re-reading the accumulated practitioner literature from a different viewpoint—that of the expert-tutor model.

**ASSIGNMENT EXAMPLES**

The following examples of assignments currently being used in introductory courses combine faculty concerns with standard competencies. Each assignment is meticulously constructed to lead students through a series of searches which compile into the materials of the closely specified

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**Figure 4. Knowledge/action triangle**

Data: 452 F°

Fact: [Context: who, where, when, why, how]

Information:
- emotional
- cognitive

Action Response:
- forget
- remember
- analyze
- act (FIRE!)

Experience:
- pattern
- relationships
- informed action
- emotional reaction

Knowledge:
- cultural expression
- social diffusion

WISDOM:
- ethical basis
  - for
  - "right
  - action"
final project. These assignments use several instructional design components and have been time-tested. The layers of learning have been integrated into each task, and the spectrum of knowledge needed has been articulated beyond that which is easily available. Note that the assignments vary with respect to ways students can learn from each other and involve a process designed to take the student from raw data through the stages to considered action. Hardest of all to build into the student project is a reverence for intellectual honesty, for the power of scholarship. And, more than imagination or empathy, wonder is a kind of sixth sense (Carlyle, 1834; Lasch, 1991; Stoehr, 1994) one should not abandon with childhood; successful assignments incorporate the powers of curiosity and appreciation, allowing students to experience the awe in the process and its results.

Even the best assignments need regular evaluation and renewal. No more than the Internet remains constant across the school year should the assignment be exactly repeated each semester. For instance, each project design needs to be evaluated each year in terms of librarian and faculty experience (How can it be done better?) and in terms of joint objectives and values (Is it still appropriate? Does it do the job?). Each year the librarians should actually walk through the assignment, testing the assumption that it clearly leads students through the process, through the resources and issues, and through the particular library. The personal benefit of this review is renewed contact with current information and scholarly sources and is, in effect, a micro-sabbatical on the subject.

CRIMINAL JUSTICE

In a Criminal Justice I and II course for beginning criminal justice students, the students use LEXIS online and the standard legal sets: U.S. Code, American Jurisprudence, ALR, and state equivalents. The first semester the students must research, individually, simple legal questions on LEXIS with support from the legal texts as they learn to understand head notes, citations, syllabi, and other keys to analyzing cases. The second semester, the students are assigned to small groups, two groups to each complicated mythical case; the rest of the class will sit as jury when the two groups, one defense and one prosecution, present the results of their work with LEXIS online, the law books, common sense, journals, and the New York Times. One group won a case that turned on whether a car had been borrowed or not by discovering that the car in question was worth more than $50,000. For the librarians and the students, this is an extremely time-consuming assignment, but it does indeed cover the real-life issues and competencies of the discipline and is, for most students, the highlight of their second semester.
TEAMWORK

Because teaming is a popular concept of the moment in management and health care systems, it is used as the format by faculty who teach, in one case, “Human Resources Management,” and in another case, “Biology for Non-Majors.” The groups are assigned urgent issues such as the Americans with Disabilities Act (which personnel officers must understand), or, for biology, trash incineration, which is a bitter local problem citizens need to address. Once again the assignments are spelled out in detail so that students review primary documents, conduct interviews, gather statistics and journal articles, survey the popular press and government documents, and prepare a class presentation which is graded using prestated scholarly criteria by the group, the class, and the professor.

PRIMARY DOCUMENTS

A popular device is to start each student with the analysis of a particular document (for instance, a table from the U.S. Statistical Abstract), an over-the-counter drug, a vignette from history, vital statistics from a particular township, or a provocative professional journal article (see, for example, Hall et al., 1994). The worksheet then specifies what information the student must collect, the way in which the data must be supported, the range of sources (print and online) that must be consulted, and how the student should analyze for conclusions, create context, and link to issues discussed in class. For instance, statistical tables can be linked to issues in sociology, state and local government, or economics; the drug formula illustrates issues in introductory chemistry; the vignette and vital statistics lead students into activities which introduce them to the methods of history (Blandy, In press).

BRIEF ASSIGNMENTS

For short projects, assignments may ask students to design a trivia birthday card for a friend, complete with bibliography for the professor who has specified sources to be used, or students may be asked to design an annotated Internet map, linear or graphed, which helps fellow students locate useful Internet sources. Students may be asked to prepare a handout of useful information sources for a local nonprofit group of their choice such as a hospice, literacy volunteers, or parents without partners. The short assignments, like the one-hour library instruction unit, must not be freighted with too many competencies and must be just as specific about expected activities as the longer projects.

CONCLUSION

Does all this make students smarter (or make the faculty and librarians more clearly intelligentsia)? Are academics, from apprentice to master, better informed about issues before recommending action (Sliwa, 1994)? Librarians and faculty in the electronic environment must be
learning along with the students, beyond motor skills, pattern recognition, and database construction to the strategies of the scholarly layer. The joy of moving from apprentice to journeyman, that is, from one who is held in the workshop to one who has earned the right to step out into the world, is a joy college faculty and librarians owe their students. In an information-dense world, the electronic environment of databases, Internet, distance learning, and interactive programs, as attractive as it is in its own right, is changing scholarship and the ways scholars share their concerns. The faculty themselves have changed the way they learn and then act, the way they use their expertise (Sliwa, 1994). Undergraduates now have access to mind-boggling amounts of information, most of it still obtained through the library at the prompting of faculty and course assignments. The library can serve as the laboratory of the mind in which students learn to frame their questions, gather sources, and evaluate the results with a chance to practice self-direction and independence of thought (Connell & Franklin, 1994). In this context, we can see how library-based research provides the means to work with, not lecture at, students and how the research process, while using all manner of sources, is based on the constants of clear thinking, verification, reflection, and serendipity. The mental processing that occurs as the cursor blinks will, across a lifetime, turn out to be as significant as the information that serves the moment.

**REFERENCES**


Undergraduate Instruction and the Internet

Judith M. Pask and Carl E. Snow

Abstract

Today's undergraduates vary greatly in their information and computer skills. Few are motivated, or even see the need, to improve these skills yet are excited and curious about the information superhighway. Several projects which integrate the Internet and specific Internet resources into undergraduate teaching and learning and the problems involved are described.

Few technology-oriented undergraduates have not heard of the information superhighway. From what they read and hear, students believe that taking the wheel is simple. They are frequently unprepared for the complexities of the network, the difficulties with equipment and connections, and the overwhelming amount of relatively unorganized information. Students, particularly those with little computer experience, may run off the road quickly due to sheer frustration despite their competing desire to be an Internet cruiser. Librarians and faculty members who are having students use Internet resources are still grappling with the best way to assist them. This article will describe activities which may assist student learning.

Using the Internet involves several types of activities (Abernathy, 1993) including electronic mail (e-mail), obtaining text or software from online libraries (FTP), real-time roundtable chats (IRC), mail groups (listserv, usenet groups, newsnet), and browsing gophers or World Wide Web (WWW) pages to find specific information resources and searchable...
databases. It is this latter activity in particular—finding useful information on the WWW—which has expanded academic libraries beyond their physical walls and rapidly drawn librarians into teaching students Internet skills.

Although students may have used e-mail or played games on the WWW, these activities do not prepare them for using the Internet to meet specific information needs. The Internet operates by very different rules from other electronic information systems which students may have previously used. The Internet has no physical shape or boundaries. Unlike a printed resource, it is not static but constantly grows, and the speed of these changes can be instantaneous. Although a resource present today may disappear the next day, students do not realize that the information keeps changing.

Currently, the Internet is a common resource where there is an egalitarian spirit and an attitude that anything goes. Information added to the Internet is not reviewed by a publisher or a librarian as printed articles and books may be. Students, unaware of these invisible filters of the information they find in libraries, may not realize what is missing on the Internet. Instead, they view the Internet as just a bigger and better library and a way of avoiding the apparent complexities of modern libraries.

Undergraduates have made the transition from card catalogs and printed indexes to online public access catalogs (OPACs) and CD-ROM periodical indexes relatively quickly due to the media hype of the need to adopt the new technologies. Having seen automatic teller machines (ATMs) replace bank tellers, and computer games replace board games, they view OPACs and CD-ROM indexes as just bigger and better electronic versions of card catalogs and the Reader's Guide. Despite the efforts of bibliographic instruction librarians, few students have learned the intricacies of keyword searching and Boolean logic or understand the reasons for evaluating the information found. After all, putting a simple topic into a computerized resource results in large quantities of information, and one can find what is needed within that group of information. For most undergraduates, these crude research methods have sufficed for their needs until they try to transfer their simple skills and mental model to the Internet. The difficulties of quantity, and the varying quality, of information, together with the problems of connecting and finding information, have become obstacles for undergraduates.

Gates (1993) offers the example of a Professor Jones who wants to make a document available. Jones does not need to clear this with any regional, national, or international organization. In fact, he does not need to tell anyone it is there. With the appropriate computer knowledge, anyone with an Internet connection can, and does, add to this information pool. The ease with which information can be added also
makes changing or correcting online information easy. Simply trusting that an Internet document is accurate may not provide the complete story. For example, on February 11, 1994, the Associated Press reported that the electronic version of a widely circulated White House press release criticizing a scholar's article on the Clinton health care plan had been altered. The initial press release used the word "lie" four times while the electronic version did not. The White House explained that they reserved the right to edit as all online authors can (Associated Press, 1994).

If anyone with an Internet connection can make almost anything available, sorting good (useful, relevant, reliable) information from bad (unreliable, false, extraneous) also becomes a problem. At a time when both education and business are emphasizing productivity, spending hours determining the reliability of information is not profitable.

Trying to find specific and useful information is complicated by the vast quantity of information on the Internet. If Jones had published his document as a book, he would probably have been asked to provide an index for the manuscript. Once the book was reviewed and purchased by a library, his document would be indexed in the library's catalog as well. On the Internet, there is no comprehensive index or easy way to retrieve specific information. Alley (1992) writes: "There is lots of very useful information floating around on the Internet and without organization and structure it will get lost" (p. 1). Indexing a global resource is an overwhelming task. In the past, librarians have developed classification systems, cataloging formats, and controlled vocabularies to organize print materials, but computer scientists have developed Internet tools such as Gopher, Archie, Veronica, and World Wide Web. Krol (1993) states that each one of these [Internet tools] solves a part of the problem, but none has gone far enough or become widely enough used to solve the general problem of resource discovery, selection, and access (p. 6). Librarians are claiming their expertise and moving to tackle this massive indexing task. In a press release on April 7, 1995, OCLC announced that they will produce NetFirst, a comprehensive database of Internet accessible resources. An initial file of approximately 50,000 records will be introduced in the summer of 1995. The database will be created using a combination of automated collection and verification techniques and conventional abstracting and indexing practices.

Another librarian-initiated project has been announced by a Columbia University librarian, Magier. Collection development librarians at New York Public Library and Columbia, New York, and Rutgers Universities will explore, categorize, and evaluate Internet resources in eight fields: area studies, art and architecture, business, history, literature, music and performing arts, science, and social science. True to the library tradition, the results of this collaboration will be shared throughout the Internet (Jacobson, 1995).
For beginning users, the Internet is not yet user friendly. It will continue to grow and, in at least the near future, indexing or other software tools will not greatly assist users in reducing this volume. Many professors and librarians, while exploring the Internet, have discovered their personal favorites. Wanting their students to become familiar with this tool, they demonstrate the system and include an assignment in the syllabus. Students, having perhaps merely watched a proficient Internet searcher hit all the right keys, are given a list of questions for which they need to find the answers by Friday. Their initial problem may be as basic as not knowing how to connect easily to the Internet. Some undoubtedly have never had a computer account. Others will find it difficult to find an available computer in a laboratory. All of them will probably feel the immediate pressure of having to find the answers; that becomes their only goal. Few of them will have time to think about the system or the process they are being asked to learn.

The authors conducted an informal survey by asking for information on undergraduate uses of Gopher, WWW, or network information systems on several listservs in September 1994. Use of e-mail, listservs, or newsgroups was excluded from consideration. Of the ten responses received, five were from librarians, four from faculty in other departments, and one did not indicate his affiliation. All uses involved student projects as part of a specific course with subjects that included education, biology, Chinese Buddhism, engineering, business, history, international relations, and freshmen seminars. Although it appeared that one or two assignments were more focused (i.e., students were directed to a specific site), most were of a scavenger hunt nature designed to introduce students to the resources of the Internet. Specific objectives included learning to navigate the Internet and to access information sources, examining a range of databases and information services available, and providing tools that assist entry to remote systems. Nearly all responses mentioned that difficulty with connections caused student frustration and resulted in two projects (one in international relations, one in engineering) being considered failures by the instructors. In contrast to the Internet, other electronic information systems which students are familiar with seem much easier to connect to and use. Today's OPAC systems are up 98 percent of the time and simply rebooting a CD-ROM that has hung up simplifies the need to find the exact cause of the failure. In contrast, the Internet's multiple connections, and thus multiple places for failure to occur, create frustration and take control away from the user. This is only exacerbated by an assignment with a deadline—and by crowded computer facilities.

A similar Internet assignment at Purdue University received a mixed response. As part of the course, Emerging Communications Technologies (Communications 435) taught by Tuan-yu Lau, eighty students sent e-mail messages and completed an eight-question Internet hunt
assignment using the libraries' THOR Plus gopher system. In Fall 1993, the class was 84 percent seniors and 64 percent female. Few of the students had used computers before in their studies, as evidenced by one-third of the respondents rating their own knowledge and use of computers as low to none (34 percent) on a four-point Likert scale. Only nine students (11 percent) rated themselves as good. Responses to questions regarding their level of anxiety about e-mail and using a gopher before and after their class assignments indicated that instruction and hands-on experience did increase comfort levels. Of the responses, 96 percent recommended that future students in the course be given a similar assignment (T. Y. Lau, personal communication, December 10, 1993).

Most of the students found the assignment beneficial and fun. Many appreciated the opportunity to learn about the new technologies and only wished it had taken place earlier in their undergraduate education. They were impressed, but also frustrated, by the mind-boggling amount of information available. Many were annoyed at the cryptic menus and the time needed to search through submenus. They felt that the process would have been even more difficult if they had not been looking for answers (a recipe, weather report, job announcement) to specific questions. Although they had received instruction on using Veronica, students needed additional help from the laboratory assistant to find appropriate sites to answer questions. Searching for guidance, one student compared himself to a rat lost in a maze. He felt that if one did not find the right set of menus, one could not find what was needed, and that perhaps an Internet map would be helpful. Having read about, and discussed in their class, the new information technologies, students also were aware of the problems of quality and authenticity on the Net; they reported the frequent discovery of junk mail and difficulty in identifying authorship.

As availability of Internet access and media coverage increases, significant new demands have been placed on libraries to provide training. In 1992, Pengelly and Brown wrote that "if or when instructors start using the Internet as a teaching tool, we may get a demand for instruction that far exceeds our capability to provide it" (p. 186). Instructors have started using the Internet as a teaching tool, and librarians have responded by developing seminars, workshops, and courses (Pengelly & Brown, 1992; Rockman, 1992, 1993; Silva & Cartwright, 1993; Page & Kesselman, 1994). However, as Ensor (1994) describes, "there is no easy path to understanding it [the Internet] that will work for everyone. Even those familiar with the basics of the Internet may find it difficult to find information on specific topics" (p. 9). Just as the Internet is complex, instruction on its use on an individual campus can be complex. Access by individuals can vary from direct connection to dial up. This seems to be a primary obstacle for undergraduates. They are often unskilled computer network users and need specific support to learn to access the system. Any instructor needs to keep this as simple as possible.
Currently, our expectation to have students discover and use many resources of the Internet during one short seminar, or after a demonstration, may be unrealistic. Just as the Internet is an evolving system, so too must an individual's knowledge of its use evolve. Page and Kesselman (1994) point out that learning Internet skills seems to follow a natural progression from use of e-mail, to FTP, to the use of search tools such as Gopher and WWW. Librarians, although experts in information retrieval, have found that, when it comes to the Internet, sometimes they cannot "do it all." Instead, librarians are finding their role to be one of a guide or consultant. At Indiana State University, nine librarians and a systems staff member formed a team to answer information systems questions from faculty. The Internet became such an important aspect of the team's role that now all librarians are recognized as consultants for other faculty learning to use the Internet (Davis et al., 1995).

For many years, bibliographic instruction in academic libraries has emphasized the teaching of broad concepts rather than instruction in using specific reference sources or tools (Wilson, 1992) and the transferability of these concepts or strategies to other information resources such as the Internet. To be successful Internet users, students must have a clear understanding of the broad context of the Internet and its relationship to other electronic systems. Beyond the computer skills required to use the system, students still need to be able to use the same basic information literacy skills librarians have stressed in the last decade. Students must be familiar with what can be expected from the Internet, how to phrase their information needs, where to look for the specific information, how to structure their question, and how to evaluate the results. Just as critical thinking skills are needed to deal with the many choices of super catalogs, CD-ROMs, and other electronic media in libraries (Oberman, 1991), the same skills are needed to sort through, and evaluate, resources and information found on the Internet.

Undergraduates need to place the Internet in their mental model of information retrieval tools and develop proper strategies for fulfilling their information needs. Students must understand not only how to use the Internet, but also when it is appropriate and what problems they need to be prepared to deal with. A hands-on exercise, designed to build a mental image of using the Internet as an information retrieval technology, is the PLACES Game developed by Brandt (1995). Through role-playing, handouts, and online demonstrations, students learn how client server protocols used by Gopher and WWW work. While one student acts as the client and retrieves menus from other students (servers) in the classroom, the instructor discusses the amount and kinds of computers on the Internet and the functions of the client software used to retrieve menus and to organize the information for easy viewing despite hardware differences. Servers are described as holding stored information.
until a request is made. Problems encountered, such as servers down for maintenance and connection difficulties, are explained. As the differences between browsing and searching are demonstrated through the results of a Veronica search, the concept of, and need for, evaluation is introduced. To illustrate a Veronica search for a keyword such as rock, each server (student) is given a pile of paper strips and told to give the client any that contain the word rock. The client then reads out a random sampling of items retrieved, showing the many ways the word may be used (e.g., rock and roll; rock climbing; Little Rock, AR) and the possible duplication of items. This begins the discussion of the need to evaluate the information retrieved. The students' need to have this larger view makes continuation of instruction in information literacy skills appropriate and critical. In many aspects, this evaluation is not any different from evaluation of print materials or information received from individuals, television, or radio (Janicke, 1995).

Students need to be able to evaluate not only what they find but also weigh the time and effort needed to find information on the Internet against its value. Several students in the Communications 435 class felt they could have saved time and obtained adequate results using another resource. Krol (1993) points out that currently a race between a good reference librarian in a good library and a person sitting at a networked terminal might easily be won by the reference librarian since network tools are not yet fast enough or easily usable (p. 6). In time this will change but, as the amount of information will continue to grow, students will find it even more difficult to discern what is important, making well-developed critical thinking skills necessary for success.

Currently, librarians find themselves in a dilemma as they try to balance students' desires to learn about the Internet and students' lack of evaluation skills to determine when the Internet is the best resource for an information need and if the information retrieved meets this need. Classroom activities and assignments need to be carefully designed to satisfy student interest and yet teach the needed skills. For example, a class on keyword searching and use of Boolean operators might include an application of the concepts to a library catalog accessible through the Internet.

Specifying a particular site that is already known to have relevant, well organized, and valuable information is one way to guide new Internet users and make their early experience rewarding. One skill librarians bring to the Internet is their knowledge of subject classification. Current Internet tools provide only a keyword search for information, and users must be aware of exactly what they are searching for. Kalin and Tennant (1991) discuss the need to use both formal and informal sources of information to identify available resources. They identify network information centers (NICs) and lists or catalogs of network resources produced by NICs or other organizations as formal sources, while informal lists are compiled by individuals to fill a specialized niche (p. 29).
Table 1 provides addresses for selected directories which identify Internet resources by subject or list new resources available on the Internet. Despite a lack of evaluation of information added to the Internet and inconsistent organization of what is available, individual Internet users are providing valuable subject approaches. Although such guides are only as good as the individuals doing them, they do provide another opinion and indicate some reliability of the source.

Amato's column, "Internet Reviews," beginning in *College & Research Libraries News* in February 1994, provides evaluative information. Recognizing the difficulty in identifying and assessing resources, this monthly column provides reviews that take a critical eye to resources available on the Internet (p. 89). In addition, a series of ongoing articles (Internet resources for . . . ) in the same publication lists Internet sites for academia on subjects such as law, health and medicine, and economics (Jacox & Striman, 1995; Hancock, 1994; Morgan & Kelly-Milburn, 1994). Columns similar to "Internet Reviews" can be found in *Library Journal* (Internet@LJ) by Polly and Cisler.

Another way of guiding use of the Internet for undergraduates as well as other users is by providing a simpler interface. In 1990, Binghamton University Libraries developed such a graphical user interface using X-windows and called it Internet 1. The Internet 1 menu has three choices: online library systems, utilities, and other Internet resources; each choice provides pop-up instructions when selected with a mouse. Each category offers a limited list of options selected by librarians to meet their users' needs (Perkins, 1994). This approach certainly improves user success but is only available on specific computers or systems.

Just as earlier library technologies caused new work groups to form that bridged both disciplines and administrative units on campus (Baker, 1991, p. 211), similar ties need to be made due to the Internet's complexity and widespread availability on campus. In some cases, librarians have teamed with the staff of an academic computing center to provide instruction (Kalin & Wright, 1994; Pengelly & Brown, 1992). Instruction responsibilities can be divided by having computer staff deal with connectivity issues while librarians handle the content and information resources available. Certainly, as we consider the complexity of the Internet, and the evolutionary nature of comprehending the Internet, coordination among the campus units developing undergraduate instruction can only benefit student learning.

In fact, integrating information and computer use throughout the curriculum appears to be an excellent, but difficult to achieve, way of assisting students in coping with a modern information-intensive society. Just as programs for writing across the curriculum have been developed, information literacy needs to be a part of all course work and emphasized.
<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>The WWW virtual Library</td>
<td><a href="http://www.w3.org/hypertext/datasources/bysubject/overview.html">http://www.w3.org/hypertext/datasources/bysubject/overview.html</a></td>
</tr>
<tr>
<td>Network Information Center (Internic)</td>
<td><a href="http://www.internic.net/">http://www.internic.net/</a></td>
</tr>
<tr>
<td>Scout Report</td>
<td><a href="http://rs.internic.net/scout_report-index.html">http://rs.internic.net/scout_report-index.html</a></td>
</tr>
<tr>
<td>Best of the Best on the Internet</td>
<td><a href="http://www.clark.net/pub/lschank/web/subject.html">http://www.clark.net/pub/lschank/web/subject.html</a></td>
</tr>
<tr>
<td>BARD Selected Internet Resources</td>
<td><a href="http://www.rsl.ox.ac.uk/bardhtml/selected.html">http://www.rsl.ox.ac.uk/bardhtml/selected.html</a></td>
</tr>
<tr>
<td>Info-filter</td>
<td><a href="http://www.usc.edu/users/help/flick/Reviews/index.html">http://www.usc.edu/users/help/flick/Reviews/index.html</a></td>
</tr>
<tr>
<td>University of Tennessee-Knoxville</td>
<td><a href="http://www.lib.utk.edu:70/1/Information-by-Subject/">http://www.lib.utk.edu:70/1/Information-by-Subject/</a></td>
</tr>
<tr>
<td>The Whole Internet Catalog</td>
<td><a href="http://near.net.gnn.com/gnn/wic/newrescat.toc.html">http://near.net.gnn.com/gnn/wic/newrescat.toc.html</a></td>
</tr>
<tr>
<td>Yahoo’s List</td>
<td><a href="http://www.yahoo.com/">http://www.yahoo.com/</a></td>
</tr>
<tr>
<td>Clearinghouse for Subject Oriented Internet Resource Guides</td>
<td>gopher://una.hh.lib.umich.edu:70/ll/inetdirstacks/ <a href="http://www.lib.umich.edu/chhome.html">http://www.lib.umich.edu/chhome.html</a></td>
</tr>
</tbody>
</table>

The virtual Library at CERN is a cooperative effort maintained by many people. It employs a number of views; including a nested subject tree display and a display utilizing Library of Congress subject headings.

A collaborative project of three organizations, Internic offers a full range of information services. The Information Services menu item leads to many quality services. Infoguide is the "reference desk" for Internic.

Scout Report, published by Internic, selectively highlights new additions to Internet information services on a periodic basis.

Librarians' selections arranged according to subject.

A selection of Internet resources made by the Bodleian Library, Oxford, UK. BARD offers a subject arrangement, a keyword search mechanism, and a title arrangement.

The Info-filter Project is a source of timely, accurate reviews of Internet resources.

Selected resources are arranged according to LC classification.

The Whole Internet Catalog, available both in print and electronically, is a subject guide to 1000 Internet resources published by Global Network Navigator (GNN) of O'Reilly and Associates. The online version is divided into easy-to-surf subject areas.

Subject list to thousands of Internet sites; lists other general Internet directories. Yahoo includes a search mechanism for locating specific resources on their list.

Collected from individuals worldwide by University of Michigan's University Library and School of Information and Library Studies. The full texts of the guides are searchable.

The What's New Page is updated three times a week, with archives of past dates easily available from the menu.
by more faculty than just librarians. One of the most difficult problems for librarians today is getting students to see the big picture—i.e., that information skills are transferable and will be valuable all their lives. Students mistakenly focus on only the immediate (short-term) project and do not see it as a rehearsal or practice for projects in their future.

An example of such integration into the curriculum is the University of Washington's program for sixty-five new first-year students called UWired, which won the 1995 Association of College and Research Libraries, Bibliographic Instruction Section's Innovation in Bibliographic Instruction award (A. Bartelstein, personal communication, April 19, 1995; URL for Uwired homepage: <URL: http://www.washington.edu/uwired/uwired.html>). Three campus units, Computing and Communications, Undergraduate Education, and the University of Washington Libraries, are collaborating to integrate electronic communication and information navigation skills into teaching and learning at the university. The program brings together librarians, computing experts, faculty, staff, and students to focus on discipline-specific instruction about electronic resources and their applications in the classroom. The selected students are each given an Apple PowerBook computer to use and are participating in a year-long information technology seminar taught by university librarians. The students are part of three thematically linked clusters of classes in the University of Washington's Freshman Interest Group (FIG) program. All the faculty and graduate teaching assistants teaching in these courses are also involved in the UWired project and have received extensive technology training. The benefits for the faculty members have already been observed as they have had opportunities to talk with each other about class assignments and projects and thus complement each other and create interdisciplinary links for the students. The potential is also there for collaborative learning among the students (A. Bartelstein, personal communication, October 4, 1994; Monaghan, 1994).

Limited computer facilities often make it necessary for students to work together in groups on Internet assignments. However, this can be a positive teaching tool and, as new electronic classrooms are designed, many are planned to accommodate such collaborative learning. Having an opportunity to practice group communication skills, testing ideas with other students, clarify their thinking through discussion, and learning from new perspectives can increase student learning and retention (as computer anxiety decreases).

The golden halo surrounding the Internet is fading somewhat as both professional librarians (Crawford & Gorman, 1995) and Internet addicts (Stoll, 1995) write of their concerns about our electronic future. Presently, users are most concerned with how to connect and navigate the Internet, perhaps viewing it too much as an extension (bigger and better) of older technologies which it might replace. However, as emphasis
shifts to how users can really make use of the Internet (Connell, 1994, p. 609), we will begin more fully to integrate it into our information-seeking behaviors and teaching. It is difficult to predict how the Internet's continued use will shape our future, but it is a future in which academic librarians must be leaders.

Librarians, having already introduced students to computerized information systems, are poised to become campus leaders in coordinating and integrating Internet instruction into the curriculum. They can assist in facilitating campuswide coordination of Internet use and education by actively working with campus computer centers to provide systematic instruction.

Despite being described as the Nintendo generation, undergraduates are not automatically able to use the Internet. Problems with simply connecting can frustrate students before they have a chance to move to the point and click environment of Gopher or World Wide Web browsers. Librarians, with their knowledge of searching strategies, need to work with other teaching faculties to interpret Internet resources and guide undergraduates in effective use of networked information systems.

The conceptual skills which bibliographic instruction librarians have been teaching remain vitally important, and emphasis needs to be placed on teaching undergraduates the importance of evaluating their information need and the information retrieved to satisfy that need.

Although future students may be better prepared to use the Internet, having already used networked information systems, colleges and universities will need to have the teaching interface in place to ensure that such skills are taught throughout the curriculum.

REFERENCES


Library User Education: Examining Its Past, Projecting Its Future

VIRGINIA M. TIEFEL

ABSTRACT

Technology, economic factors, and changes in the educational system are major factors in what is being termed a “revolution” in libraries. Does library user education have a place in that future? Some believe that libraries would be more effective concentrating their resources elsewhere. To put library instruction in perspective requires a look at its past and the status of programs in terms of content, impact, and limitations.

INTRODUCTION

Dramatic changes in technology and society are having a considerable impact on libraries and their instruction programs. These changes have created an urgency to teach users how to become more effective, efficient, and independent in their information searching. In response to this, the goals of library user education have expanded from teaching tools to teaching concepts and from library instruction to information literacy and lifelong learning.

The Gateway to Information, developed by the Ohio State University (OSU) Library, is one response to the current issues and problems and those foreseen in the future of libraries and information. The Gateway to Information was designed to help undergraduate and graduate students identify, find, evaluate, and select the most useful information for their needs without help screens or handouts. The Gateway guides users in applying search strategy concepts and critical thinking to their information seeking.

Under development since 1987, The Gateway to Information has been continuously evaluated by users; revisions have been made based on the results of more than 7,000 evaluations. The Gateway is available on most
public terminals in the OSU library system. It will soon be accessible via
the Internet and will integrate the sources of the Internet into its narra-
tive. The information explosion has hastened the need for development
of expert systems like this.

The unthinkable has become a reality. Libraries are being challenged
as not relevant or necessary to the future of information. Current news
and library literature specifically are replete with information and ques-
tions about the future of libraries. There has even been some specula-
tion that the physical library may continue to exist but only as a sort of
dinosaur museum.

If libraries do have a future, in what direction does it lie? Does li-
brary user education have a place in that future? Technology, economic
factors, and changes in the educational system are major factors in what
is being termed a "revolution" in libraries. One prediction about the
future of libraries is that budget cuts will force the elimination of such
"new" programs as library user education. In reality, the direction of
information and libraries points to more emphasis on library user educa-
tion. Also, when examined in the light of history, library user education
is not a new service but a very old service predating even reference service.

How have libraries and librarians responded to the prediction of the
death of libraries? In many ways their response has been impressive. In
a steady stream of progress, libraries have developed and expanded pro-
grams to meet the changing needs of library users. Prominent among
these is the library user education program. This is an examination of
that steady progress and the move by librarians to prepare users for the
continuing expansion of information. The Gateway to Information, de-
veloped at The Ohio State University Libraries, is described as one ex-
ample of how libraries and librarians are responding to the demands of
the future.

To put library user education in perspective requires a look at its past
and present status. Is library user education an important activity? What
programs and problems can be traced through its history? What are the
content, teaching methods, evaluation studies, and problems of current
programs? What has been the impact of these programs? What does the
future hold for library user education? How are the factors of change
affecting libraries and library user education? How can librarians re-
spond to these changes? The Gateway to Information is offered as one
response to, and portent of, the future. To explore these issues, a defini-
tion and outline of the objectives of library user education is needed.

**Definition of Library User Education**

Broadly defined, library user education (also called library instruc-
tion) teaches users how to make the most effective use of the library sys-
tem. At OSU, user education encompasses all activity undertaken to
help students become efficient users of information—i.e., how to identify the information need and then how to find, evaluate, and select the best information to meet that need. Activities to achieve that goal include orientation sessions, workshops, handouts, and course-related and course-integrated instruction. The term "library user education" has more recently been broadened to include the concept of information literacy, which will be defined later.

**Objectives of Library User Education**

Objectives for library instruction were established as early as 1881 when Otis Hall Robinson called for clarification of instructional goals at the American Library Association conference. He wanted purposeful instruction. As relevant today as they were a hundred years ago, three important objectives were cited:

1. Students need to "develop the art of discrimination" to be able to judge the value of books to develop critical judgment;
2. Students need to become independent learners—to teach themselves;
3. Students need to continue to read and study—to become lifelong learners. (Tucker, 1979, p. 271)

From these objectives has recently come the idea of information literacy.

**Importance of Library User Education**

Having defined library user education and some of its objectives, the next issue is the importance of library user education. Does it make any difference in how people use information? Does effective use of information make a difference in people's lives? While debatable, there is a strong belief that effective use of information is important. It has been said that you will be mentally more powerful if you concentrate on how to find knowledge rather than try to remember everything you have learned. It is widely recognized that the ability to use information is extremely important in today's society and will continue to become more so.

Recognition of the importance of information and library user education is found in *College: The Undergraduate Experience in America* by Boyer (1987) and funded by the prestigious Carnegie Foundation for the Advancement of Teaching. This work is especially important to libraries because it was the first major recent publication to mention and even promote library user education. Boyer states:

The college library must be viewed as a vital part of the undergraduate experience....The library staff should be considered as important to teaching as are classroom teachers. . . .We further recommend that every undergraduate student be introduced carefully to the full range of resources for learning on campus. Students should be given bibliographic instruction and be encouraged to spend at least as much time in the library—using its wide range of resources—as they spend in classes (pp. 164-65).
If instruction in the use of information is important, how successful have academic librarians been in developing library user education programs? Miller (1992) has said: "The concept of 'Bibliographic Instruction' appears to be one of the greatest success stories of modern American academic librarianship" (p. 140). However, many believe that the term and concept of library user education are not sufficient to carry the profession into the electronic age and that it must be expanded into the concept of information literacy. It is possible that expanding the concept to include information literacy may make it difficult to repeat the success of library user education of the past.

In summary, library user education can encompass a broad range of activities. Its need and importance have received increasing recognition to which librarians have responded with considerable success. There is some concern whether this success can be continued to encompass the broader concept of information literacy.

Background

To put library instruction in perspective requires a look at its past and present status. How did library user education get started? What programs and problems can be traced through its history? What has been the impact of these programs? What are the content, teaching methods, and problems of current programs?

The origins of library user education can be traced back more than 170 years. The earliest evidence of instruction—a librarian lecturing to undergraduates—was found at Harvard College in the 1820s. Most early academic librarians were professors with part-time library appointments who taught the use of libraries for academic purposes. Library lectures were the chosen form of instruction by such institutions as Harvard, Indiana University, and Columbia. Separate courses were implemented in the late 1800s by Ray Davis at the University of Michigan, Azariah Root at Oberlin College, and others. Over the next few years, about seventeen other institutions adopted instruction lectures or courses.

By 1900, six of the seventeen institutions examined were no longer providing library instruction, and by 1903, instruction had been dropped by two more institutions. These instruction activities existed from one to fifteen years with an average of about five and a half years (Hernon, 1982, p. 25). Why were these programs of such comparatively short tenure? In the 1860s, social changes and developing technology shaped education and its goals. These same factors led to the early rise and rapid decline of library instruction between 1870 and 1914.

As academic libraries grew in number, however, librarians became concerned about making collections accessible, and the importance of library instruction again became apparent. In the early 1900s, the resurgence was led by William Warner Bishop and William Frederick Poole...
who espoused concepts of library instruction that are valid today. They wanted to make students independent learners and to clarify the role of the library in the university. In 1912, Bishop noted that librarians and professors were looking at methods of library instruction and doing some experimenting (Tucker, 1979, p. 273). These were largely individual efforts and did not result in established programs. There was some advocacy for course-related instruction instead of the separate course, but the concept was not developed.

Hopkins (1982) notes that, from 1876 to 1932, library instruction articles reflect a move from teaching the use of materials for research to instruction in access procedures. From 1907 on, some emphasis was given to teaching basic skills to first year students. Criticism of this freshman instruction began to surface in the late 1920s, deeming it shallow instruction. From 1945 to 1970, the increase in the production of knowledge and changes in higher education were similar to what had happened after the Civil War. Academic libraries underwent rapid collection growth and acquired new techniques of organization and retrieval. Librarians placed their major emphasis on rapidly growing collections which were the result of the increase in production of information and changes in higher education. In the 1950s, library instruction was eclipsed by the development in technical services. This was so pronounced that, in 1956, Jesse Shera advised librarians not to pursue the teaching role (pp. 194-95).

In the 1960s, two changes revived interest in library user education. Specialization had increased in education with more emphasis on content. At this time, Patricia Knapp introduced the concept of problem solving to library instruction. Concomitantly, a rapid democratization and increased complexity of libraries made information-seeking more difficult for students who were expected to cope with a system designed for faculty and graduate students. The instruction that developed in the 1960s and 1970s focused on access skills and bibliographic tools.

The establishment of the Library Orientation Exchange (LOEX) in 1973 with funding from the Council on Library Resources was a major step forward in the library instruction movement. Further impetus was given to the movement in the 1970s when the council funded programs to integrate academic libraries into undergraduate libraries. The program was based on Knapp's work, and CLR/NEH gave grants to thirty-six institutions "to explore innovative ways of enhancing the library's participation in the education process" (Gwinn, 1980, p. 7). With the arrival of the 1980s, emphasis in instruction shifted from teaching skills to applying concepts.

**Current Status**

What is the current status of library user education? What is being taught and which teaching methods and systems have been implemented in programs? What do evaluation studies show about the effectiveness of library user education? What are some problems common to these programs?
Content and Methods

Content covered and methods used are central to understanding the current status of user education programs. For more than a decade, the consensus has been that library user education should focus on the many sources of information available and not on the mechanics of using the system. Many instruction librarians have espoused, and continue to espouse, the search strategy approach because it provides a conceptual framework for teaching students research techniques. This idea has dominated library instruction since the mid 1970s because it is a simple and adaptable teaching framework. It teaches the use of different types of tools and resources and provides an outline for systematic information seeking that is broadly applicable, comprehensive, and time saving. In addition to teaching students how to find information, librarians now recognize the importance of teaching critical thinking skills to enable students to evaluate and select the best information for their needs.

Impact

What has been the impact of library instruction as measured in evaluation studies? There are two purposes for evaluation. One is to measure the effectiveness of instruction for guidance in how to improve the program (formative evaluation). The other is to measure the effect of library instruction on the students and their performance (summative evaluation). Most evaluation of library user education has been formative. Librarians have tended not to focus on evaluation studies that would demonstrate the impact of library instruction on student learning or attitude. Most evaluation studies done in the 1970s appear to fall into one of three methods: opinion surveys, knowledge testing, and library use observation.

Despite an apparent emphasis on formative evaluation, some librarians have tried to document a positive correlation between library use and proficiency and academic performance. In a study done in the late 1960s, Kramer and Kramer (1968) found a significant correlation between student use of the library and grade point average. They also found a correlation between length of time in school and library instruction. In a similar study done in the early 1980s, Selegean et al. (1983) examined the impact of instruction on grade point average, attendance at college, and graduation rates. Significant correlations were found between library instruction and grade point average and between library instruction and attendance.

In a 1982 study using a reliable and valid systematic evaluation design, Hardesty et al. (1982) and classroom faculty found that long-term possession of library-use skills is more related to library instruction than to inherent intellectual ability or academic diligence. Breivik's (1982) study indicated that library instruction correlated with higher course completion rates and term paper writing scores. She concluded that the
study did not show how well instruction helps students with library use, but there is a demonstrated correlation between library instruction and overall student academic performance.

Today there is an increasing demand for evaluation coming from outside the library profession. An example is the action of the state of Colorado which mandated in 1985 that institutions are "accountable for demonstrable improvements in student knowledge, capacities and skills between entrance and graduation" (Greer et al., 1991, p. 549). The law requires that institutions must identify goals and activities to meet those goals and evaluate student achievement. In response to this mandate, the library at Colorado State University has implemented some surveys and testing. However, lack of funding and staff have prevented the library from implementing a program of organized, sustained, and comprehensive instruction.

Challenges and Problems

Nearly thirty years ago, Palmer (1972) criticized librarians for instructing in a vacuum, over-emphasizing the card catalog, and relying too much on the one shot lecture. Palmer also said that librarians must look at the resources that go into instruction, equate that with the small number of students reached, and decide if that form of instruction is justified. Her advice was to teach students to find their way from where they are to where they want to go, using whatever method is suitable, and to teach for lifetime learning.

Course-related instruction has long been viewed as one of the most effective user education methods. A complication of course-related instruction, however, is the requirement for faculty cooperation and the faculty member's authority to decide when instruction is given and who receives it. In short, librarians have limited control over course-related instruction. These forms of instruction are also very staff-intensive, and this is exacerbated by the high ratio of students to librarians that exists in most institutions. These criticisms do not mean an abandonment of the teaching activities of the past, such as course-related instruction, but that librarians need to continue to look for additional ways of reaching students. Course-related instruction, workshops, and handouts are still viable means of teaching information-seeking skills.

The CLR/NEH program (referred to earlier) required close work with the faculty. Funded for three to five years, the total cost was more than $2.3 million. However, a study done in the late 1970s revealed that most of the programs no longer existed. The most common reasons for failure were staff turnover, lack of commitment from the library and institutional administrations, poor cooperation from the faculty, lack of adequate planning with faculty input, and insufficient evaluation studies. Involvement of the faculty depended on stipends which ceased when the grant ended. Staff energies and staff turnover affected programs. Other factors were lack of funding and failure by librarians to plan, prepare,
implement, and evaluate carefully their instruction programs. Gwinn (1980) concluded, however, that programs were having a positive effect on education even though progress was slow.

Miller (1978), in his study of programs of thirteen libraries, observed that alternatives to formal library instruction programs were point-of-use devices, expanded reference service, and written guides which, in his opinion, were the best alternatives if they were used. Another issue is where does the responsibility lie for developing and maintaining the user education program? Breivik (1982) believes that a growing program needs a single person with a defined role to provide leadership and handle the day-to-day issues. Carlson and Miller (1984) noted such problems as cost, faculty dependency, the challenges of teaching, and the difficulty of evaluation. Other complications they identified were the difficulty of achieving a balanced program and the inability of students to transfer library knowledge from one course to another.

More recently, Bessler (1990) postulated that perhaps users do know what is good for them and that service, not instruction, should be the goal. She believes that libraries that concentrate their resources on collections and services that patrons want will be more successful than those that focus their energy on instructing the patrons. Eadie (1990, 1992) goes even further in stating that reserve readings can be adequate for the information needs of most students and describes a library with minimal reference service as working well. Eadie believes that user education came into being not because users asked for it but because librarians thought it would be good for them.

Eadie points out that one reason for ineffective library instruction is lack of student motivation. He argues that the generic instruction session trivializes information gathering; that course-related instruction is simply oral bibliography; that audiovisual does not hold students’ interest; and finally, that computer-assisted instruction is very time intensive to produce. Eadie believes handouts are all right if kept short and informal. He advocates a return to the 1960s where things were kept as simple as possible for most students, and personal service was provided for those who needed it.

However, these points of view fail to take into account that most library users are unaware of the quantity and variety of information available. They are often satisfied with materials that an experienced librarian would find wholly inadequate and/or inappropriate. Unless librarians educate users about finding information, users will continue to underutilize and misuse information. If librarians allow users to be satisfied with reserve lists and minimal reference help, they have abrogated their responsibility to ensure that users get the best information for their needs.

In summary, library user education goes back more than 150 years in American libraries. Activity has ebbed and flowed in that time for a variety of reasons. The current renaissance, which began in the 1960s,
has produced an increase in teaching activity and the expansion of instruction programs. Despite the increased growth of, and need for, instruction, the prevalent practices of library user education have limitations.

The Future

Objectives

Drucker (1994) has defined an educated person as someone "who has learned how to learn, and who continues learning, especially by formal education, throughout his or her lifetime" (pp. 66-67). Library user education programs need to support the concept of educating for a lifetime. In examining the future, what factors will affect change? What will be the impact on libraries and librarians? Finally, after we look at the future, a description of The Gateway to Information will show how and why it may be one response to the demands of future education programs.

"Information literacy will be essential for the growing cadre of knowledge workers in the 21st century" (Green & Gilbert, 1995, p. 23). Information literacy, which is now the avowed objective of most library user education programs, is an expansion of instruction as to objectives, materials, and methods. It has evolved in the way that instruction evolved from library orientation into bibliographic instruction. The Think Tank II report on bibliographic instruction defined "information literacy" as encompassing the entire world of information and seeking to prepare people to pursue the concept of lifelong learning. Information literacy extends its objectives to teaching information-seeking skills to all ages and at all times. It prepares people to use information effectively in any situation. There are no boundaries for information anywhere in any format. Information literacy may be defined as the ability to access and evaluate information effectively for problem solving and decision making. Information literate people know how to be lifelong learners in an information society (Rader & Coons, 1992, p. 113).

To achieve these goals, librarians and faculty will have to work closely together in developing teaching strategies using the latest technologies. One example of the integration of information literacy into the academic curriculum is found at Cleveland State University, where the curriculum has been rewritten to include an information literacy component. Librarians work with the faculty to include information literacy modules in courses. The library is implementing a comprehensive information literacy program that will include the teaching of critical thinking skills and evaluation of the program itself (Rader, 1990, p. 880).

The Middle States Association Commission on Higher Education has indicated in its "Framework for Outcomes Assessment," issued in 1991, that faculty should assume some responsibility, along with administrators,
librarians, and other information specialists, for information literacy for students. The statement implies that students need to acquire more complex information-seeking skills as they progress in their academic education. The commission statement indicates that this can best be done through partnerships across academe. The commission advocates examining course syllabi to determine how well the teaching of these skills is integrated into the curriculum.

Factors of Change

Drucker (1994) has said: "No century in recorded history has experienced so many social transformations and such radical ones as the twentieth century" (p. 53). As stated earlier, the enormous changes that are taking place have brought the very existence of libraries into question. What forces and environmental conditions will shape research libraries in the future? Clearly technology is a major factor in the changes that have been brought about in libraries over the last decade. Social factors have also played a large role in those changes and will continue to do so.

A few examples will illustrate the magnitude of the challenges of technological change. The quantity of scientific and technical data doubles every five and a half years but it is expected soon to double every twenty months. A digital global web of networks will make it possible to communicate with anyone, anywhere on the planet—forever altering work, play, our viewpoints, perceptions, etc. Drucker (1994) points out that digitization will make it possible to combine television, computers, and telephones (p. 55). When they merge, political and social changes will occur that are beyond our imagination. What is cutting-edge today will be passé tomorrow. For example, multimillion dollar vacuum-tube computers that were considered very impressive in the 1950s did not have the capability of the average pocket calculator of the 1990s. In 1956, the first transatlantic phone cable carried fifty compressed voice circuits. Now optical fibers carry 85,000—an increase of 170,000 percent.

Other examples of the rapid changes in technology are seen in the expansion of storage capability. In the past, a few hundred characters could be stored in a cubic inch; now that same space can hold billions of characters. Through the development of glass fibers, telegraphy has increased its capacity from fifty words per minute to billions of words in the same time. Processing has gone from hundreds to billions of instructions per second. However, a person's ability to process information remains at about 300 units per minute, as it has been from the beginning of time.

Of the social factors affecting libraries, the most obvious is the move in our society from a manufacturing base to an information base. Other factors are the increased emphasis on accountability; the changing demographic makeup of the United States; the increasing globalization of
our industries and institutions; and the shrinking of the domestic economy. Other factors are related specifically to libraries, including reductions in budgets; the development of electronic publishing; and increased user expectations. Overall, library budgets and internal systems have not kept up with the pace of change.

Impact on Libraries

How are these technological and social factors forcing libraries to change? Libraries will be required to offer more and better user services. Libraries must focus on access, not ownership, with more emphasis on delivery. Libraries must implement different forms of measurement. *Time for Results: The Governors’ 1991 Report on Education* (National Governors’ Association, 1986) examines how higher education outcomes are measured. The report states that measurement can no longer be by numbers of books in libraries or equipment in laboratories: student learning and performance must become the means of measurement (Rader & Coons, 1992, p. 110).

Libraries will attach more importance to locating and obtaining information and less to where the information is housed. Users will become less interested in the size of library collections and more concerned about the timeliness of document delivery. Libraries will be more access oriented and less size oriented. Libraries can no longer rely on the supposition that they are “good” for society and therefore deserving of support. Libraries will have to prove their value to users with emphasis on delivery of information rather than warehousing: the focus will need to be on output and not assets.

Users will no longer be satisfied with finding just citations to information; they will (and even now do) want the information itself. So far, technology has enabled us to do the same things we have always done, only better. But, in the future, technology will enable us to do different things better, and one of these will be to provide faster access to the information itself, not just the citation. As technology evolves, direct retrieval of text and image will become common.

There will be increased cooperation across all types of libraries. In the past, public and academic libraries have functioned as standalone operations but, in the next century, cooperation will become widespread among most libraries. New relationships will be developed among academic, school, public, and special libraries for the best use of resources. Academic libraries will need to become more closely coupled in planning and implementation with their institutions.

Impact on Programs

As collection development wanes in importance and access waxes, the teaching role of the library will become more important. Penniman (1992) cautions that librarians must shape the future, not let the future
shape them. He sees the challenge not as delivery of information but as ways of helping people understand and use it. Academic librarians must strive to have impact on the curricula of their institutions and, therefore, become more assertive and political in their actions. This can be achieved in several ways, among them: appointment to curriculum committees; meetings with administrators, deans, and heads of departments; and meetings with individual faculty members. Cleveland State University provides a good role model for integrating information literacy into the curriculum.

The increase in complexity of the information environment requires that librarians become proactive in teaching information skills. An expanded library user education program will include teaching the structure of information, use of new electronic formats, and applying critical thinking to information. Librarians will have to maximize the use of technology to teach more skills to greater numbers of users. More complex expert systems will be developed to help users with in-depth use of complex abstracting and indexing services. The emphasis will be on problem-solving and on obtaining and accessing information rather than on ownership. User instruction will need to provide students and faculty with basic, intermediate, and advanced guidance in use of the library.

Libraries will need increasingly to help users become more independent in locating and retrieving information. Users should be able to accomplish this using systems that are easy and transparent to use. To enable users to become more independent, librarians will need to develop user-friendly interfaces. Systems that are difficult to use place a strain on users and library services and are very staff-intensive for libraries to maintain. They require additional reference personnel to help users with logon and machine procedures, database selection, and search strategy formulation and modification.

As to methods, instruction should employ short modules that allow self-directed study with more emphasis on instructional content and less on the media used. The system should be one that users are comfortable in using and gives them a sense of control over it. Users should receive guidance on which resources are best for their needs, and basic instruction on search technique, and should feel assured that the system is not difficult and is evolving toward a more efficient, effective, and easy-to-use system.

McClure (1992) is concerned that users are already having serious problems with identifying and accessing resources in electronic networks. Some programmers, in writing instruction materials, think users want the quantity of detail about the operation that they do. Rules that appear easy and straightforward to system people do not appear so to users. Many users will abandon a program rather than spend a few hours reading the manual. McClure says the key is to find out who the users are and design software for them. There is a great need for research from the user perspective so that user-friendly systems are developed in user-based system
design. McClure makes the point that users do not want to spend much time learning a system: they want to start using it. Then, as they become more experienced, they will see what they cannot do and look for improvement in the system or for more knowledge of how to use it. What this means for designers is that they must make the system simple to learn but expandable.

Criteria that need to be applied in developing user-friendly interfaces are identified in a study done at the University of Illinois. Mischo and DeSart (1989) found that users are enthusiastic about performing searches in easy-to-use systems but often have difficulty in performing effective searches. Users have serious problems with Boolean logic and search strategies, and they prefer CAI and one-on-one instruction to formal training sessions and printed instructions. They found that most end-users of online bibliographic systems search infrequently and never progress beyond the naive user stage. So a system is needed that is easy to use but provides help with Boolean searching and search strategies.

**Impact on Librarians**

What does all this mean for librarians? Librarians will need to become more proactive and less reactive. Miller (1992) believes that, without a commitment to teaching, librarians will not be successful with information literacy and that, as collection development wanes in importance and access waxes, the teaching library is the natural route to go. He points to some hopeful conclusions. One is that many librarians know how to make sense of the complexity of information and translate it for users. Many librarians are gifted teachers and are the only group interested in, and capable of, helping students and others to find, synthesize, and interpret information. Librarians have a high degree of credibility in our society, and people are already accustomed to coming to them for help.

Librarians are the most capable of all professionals in analyzing user needs and meeting those needs effectively. Librarians are perceived as the ones responsible for instructing users in the effective use of electronic resources (and in critical thinking skills) to enable the users to select the best information for their needs. Librarians will need to be more involved with the development of user-friendly information systems.

**The Gateway to Information**

**Description and Development**

The Gateway to Information, developed by the Ohio State University Library, is one response to the current and future issues and problems facing libraries. The Gateway was designed to help undergraduate and graduate students identify, find, evaluate, and select the most useful information for their needs without the help of library staff. The goals of the project are to enable students to do the following:
1. find, evaluate, and select materials to meet their needs regardless of format;
2. access and integrate the content of online catalogs and CD-ROM databases easily; and
3. apply information-seeking and critical thinking skills independently.

The Gateway was designed as a front end to the library's online catalog and CD-ROMs and to provide guidance in choosing print materials. It was conceived as an online bridge with a common interface to electronic sources and guidance in helping students select the most relevant information for their needs regardless of format. It was also designed to provide direct access to sources for users who already know what they want.

Under development since 1987, The Gateway has been available on public terminals for more than five years. It has been continuously evaluated by users, and revisions have been made based on the results of more than 7,000 evaluations received. The Gateway is available on seventy-nine public terminals in the OSU library system. Based on the common concept of search strategy, its narrative is applicable to information searching at almost every level.

The Gateway was conceived as a partial solution to the dilemma faced by the Ohio State University Library. Recognizing that the proliferation of information had increased the need for students to become information literate, the library embarked on an intensive library user education program in 1978. The library administration and staff were convinced that, without instruction, most students would never learn how to use information, and they need to be taught systematic ways of finding information that produce better results more efficiently. Successful searching involves not only finding but also evaluating and selecting the most useful information.

The Ohio State University's library user education program in the 1980s was reaching more than 25,000 students a year with some form of course-related instruction and another 4,000 to 5,000 in workshops. These are large numbers of students, but the Columbus campus enrolls more than 53,000 students. The program was not reaching all students, and it was not providing the multiple sessions of instruction needed for students to become information literate.

Facing the challenge of teaching more students with the certainty that there would be no staff added to expand the program, the Library User Education Office considered how technology might fill the gap. Instruction in the program had centered on the concept of search strategy, which is a step-by-step process of moving from general to specific sources, evaluating the information, and selecting the most useful. As stated earlier, the simplicity and applicability of the search strategy concept has made it a major teaching tool since the 1970s. It was envisioned to design a system that put the search strategy concept on a computer so that users could find their information independently.
The Gateway provides instruction and guidance in identifying information needs, finding information to meet those needs, and providing help in evaluating and selecting the best information regardless of material format. The Gateway is so clearly written that no help screens, handouts, or workshops are needed to use it. The user can find the information needed independently without the help of library staff. The Gateway combines the use of the online catalog, CD-ROMs, and print materials. While originally designed for undergraduates, The Gateway was never meant to remain solely at that level. In fact, over one-third of its usage has been by graduate students. The Gateway is intended ultimately to serve equally undergraduate and graduate students, faculty, and staff.

Macintosh Hypercard was used to create the narrative of The Gateway because it offered the easiest method for implementation and its ability to make the continuous anticipated revisions. The ability to update both information sources and the narrative was incorporated into the project's design. The Gateway team recognized that the project must be designed to keep pace with an always changing environment of information systems and information itself. The Gateway was placed on Apple Macintosh IICX computers using HyperCard, MAC/TCP, and Mitemview. It was served by twenty databases housed in CD-ROM towers connected to a local area network.

A common interface to the databases was created and new databases were added as they became available. The narrative recommended the best information available for a specific need regardless of format. The Gateway was to use technology but not be driven by it. The Gateway also has an evaluation section designed to help students evaluate authors, books, and journals. Reminders to use the evaluation section are embedded within the narrative. A notebook section allows users to "save" their materials in a notebook and print from that.

The project team was determined to make The Gateway a user-driven system. The plan was to create the narrative and let users respond to it. The responses were collected by paper evaluations, observation, and interviews. The Gateway has undergone the continuous revisions anticipated. Evaluations span more than four years, from July 1990 through January 1995. These 7,943 evaluations indicate that 81 percent of the respondents found The Gateway very or mostly easy to use. Seventy-eight percent rated their use of The Gateway completely or mostly successful, and 82 percent indicated they would use The Gateway again. The project team believes that the continuous revision of The Gateway, based on the evaluations, has significantly improved it. Some sample comments from the evaluations are:

Thanks for your successful work.

It does the assignment for you.
This is a great program! I'm going to take advantage of this and use it all of the time.

More indexes.

More things on the Gateway

The Gateway has also been evaluated by special classes, including a graduate education class and two industrial design classes. Evaluation results have had considerable impact on revisions and additions to The Gateway. The early screens had much good information on them, but observation and interviews indicated that students did not read the screens. Students would not read more than two lines, and they preferred to skim text. Consequently, the content of the narrative was drastically reduced and simplified.

A sample search can illustrate how a student might use The Gateway to find information. Assigned a five-page paper on advertising, our hypothetical student begins her search at a Gateway terminal. The opening screen offers several options: time-saving research strategies; encyclopedias; dictionaries; periodical articles; catalogs; reviews; biography; statistics; library information; evaluation. Since she has a topic but is unsure how to proceed, she selects time-saving research strategies. The next screen offers choices in choosing or narrowing a topic, analyzing information needs, and sample strategies. She selects the section which tells how to narrow a topic. This recommends background information found in encyclopedias.

The next step takes her to the general encyclopedia section, which provides a subject approach to print encyclopedias and *Grolier's Electronic Encyclopedia*. She selects the electronic encyclopedia and types in the term “advertising,” which brings up a lengthy article with a bibliography. After reading it, she pushes the “save to notebook” button. This puts the article in the student's electronic notebook which can be printed anytime the student chooses.

After reading the encyclopedia article, she decides to narrow her topic to women in advertising. She goes back to the main screen and decides to look for periodical articles. She types in the term “advertising” and five indexes are recommended for searching. She selects *Wilson Business Abstracts* and, after reading a few of the abstracts, decides to search for the terms “advertising” and “gender.” With additional reading of the abstracts, she narrows her topic further to women in television advertising and adds the term “television” to the search. This search results in a very manageable four entries.

With book and article titles from the encyclopedia article and the Wilson search, the student now returns to the main menu and selects the catalog button to search for journals and books. She searches the catalog for the journals she needs and finds where they are in the library system.
She then does a subject search for books, typing in "women" and "advertising"; the response shows there are seven books in the library. She selects a title that is in the Women's Studies library and, being unfamiliar with that library, she clicks on the name and is connected to information showing the location of the library and giving the hours it is open. She can find the libraries that have the journals she needs in the same way.

If the student finds references to people or requires statistics, she can go to those sections from the main menu screen. Most Gateway screens provide several options. In addition to the buttons specific to each screen, three buttons are common to screens that refer to titles/resources. These buttons are related to notebook and evaluation functions. The notebook buttons are "save to notebook" and "view notebook." These functions enable students to save information for future printing and view at any time what they have placed in their notebooks. The third is "evaluate sources." This option is placed prominently on most screens to encourage students to evaluate the information they are finding. It reminds the student to evaluate the author's reputation by referring her to specific biographical sources. It also recommends sources for evaluating books and journals.

Thus the student has narrowed her topic, found and evaluated materials on the topic, and identified where they are in the library system. If she has questions about these locations, she can refer to the library information section on the main menu; this option provides information on library locations, major holdings, policies, hours, maps, and floor plans. A campus map is a particularly popular feature.

The Future of the Gateway

The Gateway is, in many ways, an ongoing project. The narrative will continue to be expanded and the number of databases and workstations will be increased. Special sections on communication, business, and women's studies are already on The Gateway. These sections, which were written by the bibliographers in those subjects, are intended for advanced undergraduate and graduate students. Additional subject sections are already being written.

The technology of The Gateway is undergoing a complete change. The technology used to support The Gateway is now outdated, and its new technology will offer greater capabilities and many new benefits. The Gateway narrative is being written in HTML language for Netscape and will be placed on the library's World Wide Web (WWW). A prototype will be up for testing in summer 1995.

This move will stabilize Gateway's technology, making it accessible by a variety of computers both inside and outside the library. Another benefit of this move is that changes in the narrative will not have to be made by a programmer but can be made by library staff. This will make
changing the narrative and keeping it up to date a much simpler matter than it has been in the past. Front-ending databases and the catalog will no longer be possible so the user will be guided to the appropriate source and then, if it is electronic, will be able to use the native version. Migrating The Gateway to a WWW using Netscape will make it possible to integrate the Internet smoothly into the narrative sources. These changes in The Gateway’s technology will make it transferable to other institutions with a minimum of time and effort.

*The Gateway as a Response to the Present and Future*

How does The Gateway relate to problems and weaknesses of past programs? Studies have shown that, to be effective, instruction must be given at the time students need to use information. In an attempt to meet this requirement, librarians have turned to the development of audiovisual tools. These tools have several drawbacks. They are expensive to develop and maintain, are not usually transferable to other institutions, and are easily outdated. The Gateway provides help for the user at the time of need.

Another major criticism of instruction is that the number of students reached does not justify the staff time required. The Gateway relieves the staff of much of the basic instruction and provides some higher level instruction too, all without handouts or help screens. A further limitation of current methods is the perceived lack of transference of knowledge from one library lecture to the needs of other course assignments. Studies have shown that students often do not know how to apply, or even remember, information-seeking skills acquired from one course when doing assignments for subsequent courses. The Gateway relieves the student of the necessity to remember information skills by providing instruction whenever she begins her search. The Gateway is self-help, which studies have shown is the preferred method of instruction over handouts and workshops.

Current emphasis in user education is on the importance of teaching concepts such as search strategy and critical thinking. The Gateway is based on the search strategy concept. The Gateway’s evaluation section integrates the application of critical thinking skills into the narrative wherever possible. Emphasis today is on lifelong learning. Students must become independent learners and then lifelong learners. The Gateway helps the user to become independent.

Studies have shown that library user education should focus on the many sources of information available and not on the mechanics of using the system. The Gateway provides its guidance/instruction without the need for handouts or help screens. The consensus is that instruction should involve short modules that allow self-directed study. The Gateway provides short and long modules and allows users complete control over their searching. Instructional content is more important than the medium used. The emphasis in Gateway’s development has been on the instructional guide called “the narrative,” not on its technology.
Libraries will increasingly need to help users find and retrieve information themselves easily and transparently. The system that would best meet the needs of users has been described as one that makes users comfortable with using it, gives them a sense of control over it, and provides guidance on which resources are best for their needs. It would provide basic instruction on search techniques, including Boolean searching, and would assure users that the system is not difficult and is evolving toward a more efficient, effective, and easy-to-use system. The Gateway’s evaluations demonstrates that it meets all these criteria.

Library user education should provide basic, intermediate, and advanced guidance in the use of the library for students and faculty. The Gateway provides basic and intermediate and will ultimately provide advanced guidance. Systems of the future need to be designed from the perspective of the user with easy straightforward rules and should be user friendly. The Gateway is a user-based system that has been developed, revised, and expanded based on user evaluation. The Gateway meets the fundamental criterion of a system that is simple to learn but is expandable.

CONCLUSION

Technological and social factors are bringing vast changes to information and its access with considerable impact on libraries and librarians. In response to this, librarians are applying the changes to broaden objectives for teaching the use of information. The Gateway is one example of this response, overcoming many limitations of today’s user education programs and positioned to meet the challenges of the future. Development of expert systems like The Gateway needs to be accelerated.

These are exciting times. Librarians must move fast to seize the opportunities and break out of the molds of the past. They must be visionary, innovative, and flexible in meeting the challenges of the future.

REFERENCES


**ADDITIONAL REFERENCES**


Faculty Culture and Bibliographic Instruction: An Exploratory Analysis

Larry Hardesty

Abstract
Faculty are often identified by librarians as the key to a successful bibliographic instruction program. Nevertheless, considerable evidence suggests that most faculty have not widely adopted bibliographic instruction in their teaching. This article examines the nature of faculty culture and how certain aspects of it impede bibliographic instruction efforts. Despite attributes of faculty culture that support the development of large libraries, the wide-scale acceptance by faculty of bibliographic instruction has not occurred. Continued initiatives by librarians to understand and to reach out to faculty are essential if academic libraries are to achieve their potential in contributing to the educational process.

Introduction
Boyer (1987), in one of the most important books on undergraduate education, College: The Undergraduate Experience in America, wrote: "We found the library at most institutions in our study to be a neglected resource" (p. 160). What is remarkable about Boyer is not so much that he reached this conclusion but that he even mentioned the library at all. Boyer's book is the first major publication on undergraduate education in recent years that not only included the library but also promoted bibliographic instruction (Farber, 1992, p. 2). Unfortunately, Boyer does not appear to have started a trend since discussions of bibliographic instruction remain conspicuously absent from higher education literature.
Bibliographic instruction has a long history among academic libraries dating to at least the 1880s (Hardesty & Tucker, 1989). In recent years, proponents can point to the steady, perhaps dramatic, movement of bibliographic instruction and its adoption by librarians (Farber, 1992, p. 2). Nevertheless, efforts, both historically and currently, to enhance the role of the academic library in the educational process can be described as "uncertain" (Hardesty & Tucker, 1989).

In his classic study, *Teaching with Books*, Branscomb (1940) found such limited use of the library by most college students during the 1930s that he asked "whether we need these large libraries, if present teaching methods continue" (p. 8). A decade later, the eminent librarian Louis Round Wilson (Wilson et al., 1951) raised a similar issue when he wrote: "Although colleges spend a considerable portion of their educational budgets for library materials and services, the contribution that libraries make to furthering the education program is less than it should be" (p. 13).

During the 1950s and early 1960s, Knapp pioneered modern bibliographic instruction through such efforts as the Monteith College Project (Knapp, 1956, 1964, 1966). Shores (1968) also attracted widespread attention to the library's role in higher education through his library-college movement. Nevertheless, as the 1960s ended, Phipps (1968) found that many librarians involved in bibliographic instruction were frustrated, disappointed, and demoralized because of "lack of staff, lack of time, lack of money for experimentation, lack of cooperation and interest from the faculty [emphasis added] and the administration" (p. 12).

The modern period of bibliographic instruction can be dated from Farber's presentation in 1969 to the College Libraries Section of the Association of College and Research Libraries followed by Kennedy's (1970) article in *Library Journal*. With Farber's presentation and Kennedy's article, the Earlham College program became widely known. By the early 1970s, bibliographic instruction had emerged as an authentic movement with its own annual conference at Eastern Michigan University. Bibliographic instruction champions would have their own section within the Association of College and Research Libraries by the mid-1970s and their own journal, *Research Strategies*, by the 1980s. By the 1990s, even some regional accreditation agencies had started to recognize the importance of bibliographic instruction (Middle States Association of Colleges and Schools, 1994).

Even with this significant progress, there remains a nagging feeling that bibliographic instruction has yet to be widely accepted outside the library, particularly by a large portion of the faculty. Recently, Jacobson and Vallely (1992) concluded:

Despite the fact that bibliographic instruction has transformed and reshaped the manner in which college and university reference staffs define their role, and notwithstanding the substantial number of students and classroom teachers involved in BI programs, our teaching faculty colleagues have not, as a group, integrated BI into
the body of materials they feel it is essential to have students learn.
(p. 362)

From the 1960s to the 1980s, the National Endowment for the Humanities and the Council on Library Resources funded programs to enhance the library's educational role, and about $3 million went to more than fifty academic libraries. In 1980, Gwinn (1980) reviewed these programs, and her review closed an important chapter in the history of bibliographic instruction. She found librarians' difficulties with faculty members frequently mentioned among the largest problems in establishing programs. The difficulties included: (1) poor cooperation from faculty [emphasis added], (2) faculty and administrative turnover, and (3) lack of adequate planning input from faculty [emphasis added]. She concluded with the understatement: "Bibliographic instruction programs in general, have not caused a major revolution among the American teaching faculty" (p. 10). Shortly afterward, Whitlatch (1983) further concluded: "In the United States, the tradition in faculty teaching does not involve extensive use of the library nor encourage students to use the library to formulate research topics or independent inquiries" (p. 149).

As bibliographic instruction entered the 1990s, Farber (1992) wrote: "[The] problem [of faculty resistance to bibliographic instruction] is still with us. Many faculty members are still unwilling to share their classrooms, to give up some control over their classes" (p. 3). Thomas (1994), in her recent study of faculty attitudes toward bibliographic instruction at a large state university, found evidence to support Farber's assertion. She concluded: "In general, most . . . faculty still seem to feel little responsibility for assuring that their students develop library skills, traditional or electronic" (p. 220).

The growth of American academic libraries during the past century and a quarter has been nothing short of astonishing. In 1876, among major academic libraries, only Harvard University's had more than 100,000 volumes. Libraries at colleges such as Bates, Bowdoin, DePauw, Haverford, Lafayette, and Oberlin held only between 7,000 and 23,000 volumes each (Holley, 1976). More than half a century later, Shaw (1931) found in developing A List of Books for College Libraries in the early 1930s that many of the colleges consulted reported fewer than 14,000 books in their libraries (p. v). Today, however, even the smallest academic library is expected to have more than 100,000 volumes to meet professional standards (Standards Committee, 1995). Yet, some evidence suggests that use (or nonuse) of the library by undergraduates remains virtually unchanged from the 1930s (Hardesty, 1980, p. 32).

**Importance of Working with Faculty**

Historically, academic librarians have long looked to faculty to motivate and direct students in their use of the academic library. More than half a century ago, Branscomb (1940) concluded:
Books bought by the library lie unused on the shelves because instructors in large numbers are not depending upon these volumes to supply any essential element in the educational process for which they are responsible. (pp. 79-80)

Following Branscomb, Knapp (1958) concluded from her extensive study at Knox College during the 1950s that:

Neither subject field, nor teaching method, nor kind of assignment, nor quality of student in a class is of crucial importance in determining whether or not a given course will be dependent upon the library. The only decisive factor seemed to be—and this is a subjective judgment—the instructor’s attitude. Where the instructor expected and planned for student use of the library, it occurred. Where he did not, it did not occur. (p. 829)

This theme of the importance of the faculty member continues to be repeated into the modern era of bibliographic instruction of the 1970s, 1980s, and 1990s. Writing in 1978, McInnis (1978) observed:

More than any other factor, the value the classroom instructor attaches to library research determines the students’ interest in use of library materials. Instructors give direction and motivation to students as to how library materials are to be used in meeting course requirements. Their influence is most often the difference between a perfunctory use of materials and dedicated examination of the rich store of scientific literature typically available in most college libraries. (p. 3)

A few years later, Carlson and Miller (1984) again emphasized the importance of faculty. They wrote:

No matter how hard librarians work, without the cooperation and support of teaching faculty, the BI program will be unsuccessful or severely limited. This happens because the attitude of the faculty is a major determinant in the response of students to the program. (p. 486)

Most recently, writing in the early 1990s, Lipow (1992) justified the importance of working with faculty members in strictly pragmatic terms:

They [faculty] see the students more often, much more often, than we do. They initiate their students’ library assignments. To the extent that faculty are misinformed or uninformed about the library, their students will be misinformed or uninformed; and conversely, the better the faculty’s understanding of the library, its resources and services for themselves, the more likely their students will have that better understanding. (p. 10)

Farber, longtime head librarian at Earlham College—now retired—and a strong proponent of the importance of working directly with faculty for course-related bibliographic instruction, advocated his view based on both political necessity (Farber, 1974b, p. 160) and educational desirability (Farber, 1992, p. 1).
There is little doubt among most bibliographic instruction librarians that, for bibliographic instruction programs to be successful, librarians need the cooperation and support of faculty. Why then do many faculty members expect, even demand, the development of relatively large library collections but often resist efforts by librarians to teach students how to use these collections? The answer can be found in the analysis of the culture of faculty.

**CULTURE**

Schein (1992), in his classic work *Organizational Culture and Leadership*, wrote: "Culture as a concept has had a long and checkered history" (p. 3). Trice and Beyer (1993) traced, from the 1930s to the present, a small but steady stream of research conducted on organizations from a cultural perspective, mostly by sociologists and anthropologists. They concluded:

Cultural processes underlie much of what happens in modern organizations. Culture filters the ways in which people see and understand their worlds. Culture prescribes some behaviors and forbids others. Culture colors the emotional responses that people have to events. (p. xiii)

Schein (1992) supports the study of the culture of organizations with the following rationale:

If we understand the dynamics of culture, we will be less likely to be puzzled, irritated, and anxious when we encounter the unfamiliar and seemingly irrational behavior of people in organizations, and we will have a deeper understanding not only of why various groups of people or organizations can be so different but also why it is so hard to change them. (pp. 4-5)

In the realm of bibliographic instruction, our puzzlement, irritation, and anxiety regarding the faculty may be best expressed by the following question asked by Farber (1992): "If BI [bibliographic instruction] is so good, and can make such an important contribution to student learning and to teaching effectiveness, why is there so much resistance to it by teaching faculty" (p. 2)?

What is an organizational culture? Schein (1992) provided one of the most inclusive definitions of organizational culture:

A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems. (p. 12)

Culture provides meaning and context for a specific group of people. It holds the group together and instills in them an individual and collective sense of purpose and continuity (Bergquist, 1992, p. 2).
Expanding the definition further, Trice and Beyer have elaborated on the characteristics of culture. Culture is collective; it cannot be created by individuals acting alone. Rewards and sanctions exist for believing and acting as others do in the culture. Culture is emotionally charged. In many ways culture helps to deal with life's insecurities. According to Trice and Beyer (1993):

People's allegiances to their ideologies and cultural forms thus spring more from their emotional needs than from rational consideration. When ideologies and cultural practices are questioned, their adherents react emotionally. They may be able to advance elaborate rationales for them, but the depth of the feelings they bring to their arguments indicates that more than rationality is at work. Members of a culture rarely dare to question core beliefs and values. (p. 6)

Rites and rituals both heighten the awareness of shared sentiments and serve to sublimate antisocial impulses.

Culture is Historically Based

A particular culture may arise on the unique history of a specific group. The ideas and practices of the culture may exist long after the uncertainties that caused them are no longer present (Trice & Beyer, 1993, p. 6). Cultures are both inherently symbolic and fuzzy. "Cultures are not monolithic single sets of ideas, but rather incorporate contradictions, ambiguities, paradoxes and just plain confusion" (p. 8). Cultures, while creating continuity, are also dynamic. They change as new members are assimilated and in response to new demands. Communication to members is imperfect and interpretation of symbols results in more than one meaning (p. 7).

For our purposes, then, significant aspects of a culture include such critical aspects as group behavioral regularities, group norms, espoused values, embedded skills, habits of thinking, and shared meaning (Schein, 1992, pp. 8-9). What do faculty members view as their major responsibilities? How do they behave toward each other and others in carrying out those responsibilities? What skills are needed to carry out these responsibilities? How do they respond to perceived changes in those responsibilities? All these are important issues in promoting bibliographic instruction in academia.

Faculty Culture

Does it Exist?

Is there a faculty culture? Until recently, there has been little cultural research in higher education (Tierney, 1988, p. 7). However, in recent years, various disciplines, such as anthropology, sociology, social psychology, and communications, have contributed to our understanding of faculty culture (Kuh & Whitt, 1988, p. 39). If we consider Trice
Hardesty/Faculty Culture and Bibliographic Instruction

According to Tierney and Rhodes (1994): "While faculty may be quite diverse across institutional type and discipline, they nonetheless perform many similar tasks, share common values and beliefs, and identify with one another as colleagues" (p. 11).

Becher (1987) wrote in a similar vein:

Paradoxically, the more it becomes possible to portray the components of the academic world as fragmented and particularized, and the more readily it can be shown that these components are in a constant state of change, the more one is inclined to apprehend that world in its entirety. [T]he different disciplinary specialisms and subspecialisms contribute to the shaping of the profession, . . . [and] by understanding the parts and acknowledging their particularity one can better understand the whole. (p. 298)

In writing about academic culture and faculty development, Freedman et al. (1979) specifically described faculty culture as "a set of shared ways and views designed to make their [faculty] ills bearable and to contain their anxieties and uncertainties" (p. 8).

While there may be a faculty culture, we must be cautious about overgeneralizations. Someone looking for a dominant monolithic faculty culture will be disappointed. Several researchers admonish that there is no such animal as the "faculty member." Within any group, whether it be doctors, lawyers, automobile workers, or librarians, some violence is done to the individual in concentrating on the multitude. According to Clark (1963), an early commentator on faculty culture: "The cultures of academic men, like other subcultures, are often subtle and complex. Faculty cultures have many segments, and only a few aspects can be caught in any one net, no matter how fine the webbing of the net nor how large its size" (p. 40). More recently, Lawrence (1994), citing several researchers (Parsons & Platt, 1973; Light, 1974; Clark, 1989; Tierney, 1991), concluded: "Higher education researchers recognize that college and university faculty are members of multiple cultures, each having its own set of normative expectations for their behavior and productivity" (Lawrence, 1994, p. 26). Therefore, while progress has been made in the study of faculty culture, Clark's (1963) caveat is still valid: "Our knowledge is still largely common sense, and it covers very unevenly the variety of colleges and universities that make up higher education in this country" (p. 40). Clark (1985) has written more recently: "Whoever generalizes about 'the faculty' or 'the professoriate' does so on thin ice" (p. 38).

Review of the Literature

Several major works have been written that facilitate the understanding of faculty culture. Notable histories of higher education in the United States include Rudolph's (1962) The American College and University, Veysey's (1965) The Emergence of the American University, Brubacher and Rudy's


Despite this seemingly impressive list of publications, the literature on the attitudes, norms, and mores of faculty in higher education is characterized by its sparsity. In general, three types of studies exist: (1) historical commentaries (largely based on observation), (2) national census-type studies, and (3) a few empirical studies. These are only loosely connected and lack a common conceptual framework, which may stem from a reluctance of faculty to be studied and to study each other.

**Historical Development**

While there may be several subcultures in the academy, Bergquist's (1992) concept of the "collegial culture" is most useful in understanding "faculty culture." This culture is a result of the influence of American colonial, British, and German traditions. The British tradition is characterized by the dominance of the liberal arts, development of the total person beyond the formal curriculum, and the emphasis on complexity of thought and of the educational process rather than a particular body of knowledge (Bergquist, 1992, pp. 18-19). The German tradition is characterized by more emphasis on the sciences and the individual pursuit of knowledge for knowledge's sake. Much more emphasis is placed on the
discipline and work of the faculty members. Education of undergraduates is de-emphasized, with the faculty being more interested in the education of upper-level and graduate-level students as researchers and scholars in their own particular field of study (Bergquist, 1992, p. 23). Brubacher and Rudy (1958) concluded: "The impact of German university scholarship upon nineteenth-century American higher education is one of the most significant themes in modern intellectual history" (p. 171).

Taken together, according to Bergquist (1992), these three traditions produced a collegial faculty culture:

in which faculty are oriented primarily toward their disciplines. As in the British tradition, this orientation may be reflected in the content and scope of the undergraduate curriculum, or, as in the German tradition, it may appear in the nature and purpose of faculty research and scholarship. (p. 26)

By the end of World War II, the various components of faculty culture—teaching, research, student advisement, administration, institutional and public service—had emerged (Finkelstein, 1984, p. 29). Martin (1969), in his book Conformity, concluded by the late 1960s, whether by academic specialization, type of school, and several other variables: "Faculty are more alike than dissimilar in their attitudes toward educational assumptions, values, and goals; the criteria for institutional excellence; and the prospects for professional or institutional change" (p. 206).

What is the source of this conformity? "The prevalent notion of 'quality' among American college and university leaders," asserted Bergquist (1992), "was built on the image of Harvard, Yale, Stanford, and other private universities that converted from the British to the German prototype by the beginning of the twentieth century" (p. 24). Jencks and Riesman (1968) referred to the birth of the "university college." This type of college, they note, is one "whose primary purpose is to prepare students for graduate work of some kind—primarily in the arts and sciences but also in professional subjects ranging from law and medicine to business and social work" (p. 24). Such a college may be part of a university with a large graduate school or a geographically isolated and administratively small college, but even these institutions draw their faculty from the same pool as the large graduate schools, "seeking the same virtues and looking askance at the same presumed vices" (p. 24). Jencks and Riesman also observed:

Out of more than 2,000 undergraduate colleges, probably no more than 100 today really fit the above [university college] description. Yet these are the most prestigious colleges in the country, to which the ablest and most ambitious students usually gravitate. They also attract the ablest faculty and administrators and the most generous
philanthropists. And they provide a model for most of the other 1,900 colleges regarded as desirable, even if not immediately accessible. Drawn by emulation on the one side and pushed by accrediting agencies on the other, an increasing number of terminal colleges hire Ph.D.s from the leading graduate schools even though they fear the impact of men who may not be happy or complacent at a terminal college, and who may also make others less happy or complacent. As faculty recruiting becomes more national and less parochial, even colleges that might prefer staff from the old parish are forced to look elsewhere if they are to grow...Virtually all terminal colleges want to hire faculty of the kind now hired by the university colleges. Whether or not these faculty come out of the subculture to which a college has traditionally been tied is secondary. (pp. 24-25)

A result, according to Martin (1969), is that even innovative institutions use conventional criteria of excellence to measure their standards (pp. 228-29).

Understanding the faculties is no small undertaking. Clark (1987a) has pointed out the “sheer scale of American higher education” (p. 54). Some 3,000 institutions, enrolling almost 12 million students, employ 700,000 to 800,000 part-time and full-time faculty members (Clark, 1987a). Nevertheless, most faculty members share the experience of advanced study at only 100 to 150 leading graduate institutions in this country (Bowen & Schuster, 1986), which limits diversity among the faculty. What are some characteristics of faculty culture?

Emphasis on Research, Content, and Specialization

Kuh and Whitt (1988, p. 76) identified a basic value of faculty as the pursuit and dissemination of knowledge. Faculty have a responsibility to be learned and to convey this learning by means of teaching, inquiry, and publication. The development of academic culture in this country has placed an emphasis on the latter two activities.

Much of the growth in American higher education occurred during the late 1950s and 1960s at a time when the German research university model held a particularly prominent role. As a result, many faculty members currently teaching in higher education received graduate training and hold values based on this model (Bergquist, 1992, pp. 25-26). This graduate training is a significant force in socializing students into the roles and expectations of faculty life (Tierney & Rhoads, 1994, p. 14). Graduate school socializes students into “the culture of the discipline” (Kuh & Whitt, 1988, p. 77). From graduate school, prospective faculty “learn to master language specific to their field of study, read journals germane to that area, and discover conferences that they are advised to attend either to present a paper, meet colleagues, or interview for a job” (Tierney & Rhoads, 1994, p. 14). This socialization continues after the individual obtains a position and seeks to publish articles and make presentations as they “burrow” toward tenure. The irony of this system is
that most of the faculty will find themselves in institutions "where the culture does not reward research in a manner akin to the research university" (Tierney & Rhoads, 1994, p. 17) and doing what graduate school did not prepare them to do—i.e., teach. Nevertheless, Clark (1993) wrote: "The reward system of promoting academics on the grounds of research and published scholarship has become more deeply rooted in the universities, would-be universities, and leading four-year colleges with every passing decade" (p. 166). Specialization dominates graduate study, and faculty defer to each other based on specialization. According to Sanford (1971), among the rules of faculty culture are:

One should not in conversation with colleagues or other professionals go beyond the bounds of one's own specialty. Other rules hold that if something outside of one's specialty comes up for discussion he should always defer to other specialists, even though this puts an end to the conversation. . . . (p. 359)

Bergquist (1992) also noted that most faculty members are expected to confine themselves to disciplinary matters. He noted: "Only the academic administrator and librarian [emphasis added] are allowed to be truly interdisciplinary, and they lose academic credibility when they assume these roles" [emphasis added] (p. 41).

Clark (1987a) identified the "service of knowledge" as one of the prevailing ideologies of faculty culture (p. 132). Millett (1962) observed that the elite of university faculty tend to look down on their professional colleagues because they are too concerned with technique and method and too little concerned with basic knowledge. This, he asserted, "reflects a belief that professional faculties are largely composed of poor scholars, that is, of persons with an inadequate mastery of a subject-matter field" (p. 98). The theoreticians are ranked highest in the pecking order, with those in the more practical, soft, and applied disciplines lower in the pecking order (Becher, 1989, p. 57). This is a pecking order on which librarians rank relatively low.

De-emphasis on Teaching, Process, and Undergraduates

A major element in faculty culture is that teaching is not highly discussed among faculty. Becher (1989), early in his book Academic Tribes and Territories, observed:

However, if it is indeed the leaders in the field who set the norms, those norms do not for the most part appear to include pedagogic considerations. In consequence, there is relatively little in this book about the transmission of knowledge, as against its creation, development and communication to fellow specialists. (pp. 3-4)

One survey of 1,680 faculty at fourteen institutions found that 42 percent of them said that never, during their entire career, had anyone talked with them in detail about their teaching. Only 25 percent said that such
discussions on teaching had taken place more than once (Gaff, 1978). Freedman et al. (1979) concluded from numerous interviews of faculty:

> Perhaps the clearest evidence that teaching undergraduates is not a true profession is the fact that professors, when they talk shop, almost never discuss their teaching. Nor do they discuss philosophy of education in an abstract way. This is not surprising, for teaching and philosophy of education are subjects in which they have little background. Discussions of educational programs or reforms usually proceed as if education had no discipline, no organized or systematic body of theory and knowledge and no need for such a discipline. (p. 8)

Freedman et al. (1979) also concluded that faculty members may avoid discussions and reflections because: "Professors sense that they are not particularly adept at teaching and so shy away from reflecting on their points of weakness" (p. 43).

Perhaps they are not adept because graduate schools do not emphasize teaching. Metzger (1987) characterized graduate programs for training faculty as consisting of a "major, a minor, and a vacuum, the last referring to the time and care expended on didactic theory or technique" (p. 161). Knowledge about the discipline is passed on much more carefully than knowledge about teaching (Metzger, 1987, p. 161).

In a report obviously intended to provoke a strong response, the authors of "Integrity in the Curriculum" wrote: "If the professional preparation of doctors were as minimal as that of college teachers, the United States would have more funeral directors than lawyers" (Association of American Colleges, 1985, p. 29). The authors observed that the emphasis of graduate education is almost entirely on the development of "substantial knowledge and research skills" with only an incidental introduction to teaching. Beginning teachers have only the memories of "teaching that was unimaginative, ineffective, and unworthy of a self-respecting profession" to guide them (p. 29). Unfortunately, Fink (1984) found that many first-year faculty members "resort to the traditional and relatively time-efficient mode of teaching: lectures and readings... [and do] not plan to go back and do a more thorough job of developing their courses because of the pressures of other duties" (p. 93).

Several elements of faculty culture result from this mixed tradition. There is the strongly held belief in the faculty culture that teaching is an art, not a science, and "one is an effective teacher because one knows his or her subject matter" (Bergquist, 1992, p. 26). Often, particularly when undergraduate education is viewed as preparation for graduate school, teaching is viewed primarily as informational—that is, communicating to students certain knowledge and techniques dominant in the discipline (Freedman et al., 1979, p. 20). A feature of faculty culture is that faculty are valued for what they know rather than what they can help other people learn (Group for Human Development in Higher Education, 1974, p. 14).
Astin (1985) described a paradox of faculty culture in that faculty members can view teaching as so straightforward that it requires no special training, and yet is so complex and idiosyncratic that mere training could never meet its extraordinary demands (Group for Human Development in Higher Education, 1974, p. 14). In contrast to this view held among the collegial culture, bibliographic instruction librarians more typically identify with the values identified with what Bergquist has described as the "managerial culture." Those who identify with the managerial culture tend to believe "educational outcomes can be clearly specified and the criteria for judging performance can be identified and employed" (Bergquist, 1992, p. 58). In faculty culture, emphasis is more on developing another researcher in a discipline than imparting "specific knowledge, skills, and attitudes in students so that they might become successful and responsible citizens" (Bergquist, 1992, p. 5). Not only is teaching not frequently discussed, it is also not rigorously evaluated. The individual nature of research as a dominant theme in faculty culture is carried over to teaching. Bergquist (1992) observed:

Many faculty members in the collegial culture would take great offense at being asked, let alone required, to accept an observing colleague in their classrooms. It would be considered an invasion of the essential privacy required by the teaching-learning act. Ironically, even though classroom teaching is certainly a public event, it is considered an intimate interchange between faculty member and student. This interchange might be profoundly disrupted if observed and judged by another faculty member. . . . The major faculty prerogative, called academic freedom, precludes both observation of classroom performance and review of ongoing research and scholarship. (p. 42)

Professional Autonomy and Academic Freedom

One of the most prevalent canons of faculty culture is that the faculty member has complete professional autonomy. The faculty member is in charge of his or her classroom. More than thirty years ago, Millett (1962) wrote:

The faculty member determines for himself course content and scope, instructional procedure, and expectations of student achievement. The outline of subject matter to be covered in the course, the selection of a textbook and other readings, the assignment of projects and papers to be undertaken by students, the timing of the instructional process (within the limits of the college or university calendar and schedule), the use of lecture as against the discussion method of instruction, the employment of visual materials—these are all matters left to the discretion of the individual faculty member. (p. 79)

In their view, the faculty, by virtue of their expertise, are in the best position to determine and organize their own work with accountability to only their professional peers (Finkelstein, 1984, p. 73).
This professional autonomy, combined with academic freedom, serves, in the words of one critic, "as the justification of unusual personal liberties. . . a strange profession indeed" (Clark, 1987b, p. 372). It also militates against inviting others, such as librarians, to share in the teaching process.

**Lack of Time**

Many observers of faculty culture in recent years have commented on the stresses and tensions among faculty (Austin & Gamson 1983; Bowen & Schuster, 1986). A large international survey reported that 30 percent of the faculty in the United States considered: "My job is a source of considerable personal strain" (Carnegie Foundation International Survey, p. 45). A particular characteristic of faculty culture is the perception of the lack of time. Getman (1992), a law professor, expounded at length, in reflecting on his career, on the lack of time:

> In the beginning of an academic career, a great deal of time is spent learning the subject matter one is teaching and figuring out how to teach it. Every hour of class is likely to involve three to four hours of preparation. . . . In the beginning, one must anticipate many hours spent researching, reading, and editing for each page of publication. For me, the ratio has sometimes been hundreds of hours of preparation for each finished page. If one adds in even modest amounts of time for meetings with students; serving on committees; attending lectures, scholarly meetings, and a respectable number of academically related social events; reading drafts of papers by colleagues and finished papers from students; developing research designs; participating in disciplinary societies; and aiding people and firms interested in utilizing one's expertise, all of the time of young faculty and much of the time of senior faculty is used up without any major scholarly effort having yet been put forth. . . . One of the paradoxes of academic life is that we are drawn to it by the lure of free time but discover that by undertaking a single task we may be committing ourselves to years of fairly intense effort. (p. 220)

He concluded: "Most of us live under constant time pressure, trying to juggle a variety of commitments and never free of the feeling that we are behind on our academic commitments" (p. 220).

Others have added to this observation. Bowen and Schuster (1986) noted: "All competent faculty members live with the sense that they are dealing with infinity—that they can never fully catch up" (p. 69). Bayer (1973) found that almost one-third of the faculty agreed with the statement "knowledge in my field is expanding so fast that I have fallen seriously behind" (p. 15). Barzun (1968) commented: "The teacher-scholar is hampered by the shortness of the twenty-four-hour day and his inability to be in two places at once" (p. 53). Tierney and Rhoades (1994) and Sorcinelli (1992) particularly noted a feeling of a lack of time among new faculty. In the most complete discussion of this phenomenon, Lawrence (1994) argued from an organizational cultural perspective that
the nature of faculty work, particularly for those faculty high in achievement orientation, creates a perception of heavy time demands not obvious to the outside observer.

How much of this stress is accounted for by any dissonance between teaching and research remains subject to debate. The Carnegie survey cited earlier found that 63 percent of those faculty members responding reported that their "interests lean to or lie primarily in teaching," but 75 percent reported: "In my department it is difficult for a person to achieve tenure if he or she does not publish." Forty-two percent agreed: "The pressure to publish reduces the quality of teaching at this institution" and 30 percent responded: "I frequently feel under pressure to do more research than I actually would like to do" (Carnegie Foundation International Survey, 1994, p. 45).

Harry and Goldner (1972) found that the extra time that faculty devote to research tends to be taken not from their teaching but from their leisure and family activities. Heavy teaching loads, perhaps more than research requirements, may lead to a perception of a lack of time and related stress since those faculty having the heaviest teaching loads—community college faculty—are most likely to indicate they plan to retire early—49 percent (Carnegie Foundation for the Advancement of Teaching, 1990). However, a study by Borland (cited in Finkelstein, 1984, p. 92) of faculty at Indiana University revealed that faculty themselves had the most influence over the allocation of their own professional duties and basically do what they want in allocating their time among their various responsibilities.

Time, indeed, may be a major factor in how faculty respond to their environment. However, Weimer (1990) suggests that faculty respond to change for all sorts of reasons other than the real ones. Because of the personal anxiety faculty members feel, she wrote:

[They] may respond that they do not have the time [emphasis added]; they will not be teaching this course again until fall; they need to get a particular research project underway; their teaching problems are caused by the kinds of students the institution admits these days; they have already tried the changes being proposed and students do not like them. (p. 19)

Real or perceived, lack of time is among the constraints frequently given by faculty for resisting change, including participation in bibliographic instruction.

Resistance to Change

With the various attributes of faculty culture, it should be no surprise that faculty members have become well known for their resistance to change. Millett (1962) observed:
The scholar wants to be left alone in the conduct of the academic enterprise. He does not welcome innovation in instructional procedures, in instructional arrangements, or in the organization and operation of a college or university. . . . The scholar is a conservative in his attitude towards and appreciation of the academic process.

Clark (1987a) stated his conclusions even more forcefully. He commented: "We cannot help but be struck by the virtual right so many academics seem to possess to go their own way, simply assuming they can do largely as they please a good share of the time, all in the nature of rational behavior" (p. 148).

As already discussed, faculty often feel pressured by time. Therefore, they are likely to resent and oppose proposals for change that require more of their time (Astin, 1985). Early in their careers they have spent considerable time developing instructional strategies they consider effective and consistent with their personal style. Once developed, many faculty members only reluctantly change their teaching methods (Carnegie Foundation for the Advancement of Teaching, 1977). Changes in the curriculum can take away much of the significance of an individual's life work. Change can threaten the defensive and insecure person.

Typically faculty culture supports faculty governance by consensus. When governance by consensus is combined with the value faculty culture puts on skepticism and critical analysis, it is no wonder that faculty culture does not support change. Perhaps, as Becher (1989) concluded: "Resistance to new ideas is inborn among academic communities" (p. 71). Many promising instructional technologies and ideas have not realized their potential because of faculty resistance (Bergquist, 1992, p. 64).

Summary

The focus here, then, is on significant aspects of the development of the modern faculty culture in the United States with its emphasis on research and content and de-emphasis on teaching and process. The result is a highly autonomous, often isolated, faculty faced with considerable pressures, including lack of time, to perform in areas in which its members are not particularly well-trained (teaching) or well-supported either by their institutions or the other members of the profession. The result is a culture characterized by a resistance to change, particularly a change promoted by those (such as librarians) who are not perceived as sharing fully in the culture and are not promoting values (bibliographic instruction) compatible with it.

Implications for Bibliographic Instruction

Faculty Resistance to Bibliographic Instruction

Writing in 1978, Farber (1978), the most successful proponent of bibliographic instruction, found that, in principle, most faculty and administrators would agree to the value of bibliographic instruction. He then asked:
If it is sensible, why then is it difficult to get many faculty to work with librarians in planning courses, or even to let librarians talk to their classes? It would seem that we are all interested in the same end—that is, the teaching/learning process and better education for students. Why then are librarians regarded as suspect? Why is there not more cooperation? (p. 71)

As we entered the 1990s, Farber (1992) asked the same question: “But there’s still resistance. Why” (p. 3)?

Perhaps faculty members themselves are the best source of the answer to this question. Stephenson (1980), a professor of biology at Earlham College—now retired, has provided the most succinct answer that encompasses many aspects of faculty culture discussed earlier:

I suggest three characteristics relevant to [a discussion of library instruction] faculty members are disciplinary chauvinists.... We faculty don’t want to give up the time our students spend on subject matter for training in literature-accessing skills. We don’t want to learn from librarians. We feel that the most effective learning is learning in our narrow subject matter disciplines. I don’t want to give up time in biology for “less important things.” (p. 81)

Another faculty member at Earlham College, Thompson, professor of English literature, has provided further insights in a wonderful essay titled, “Faculty Recalcitrance about Bibliographic Instruction.” In his essay, Thompson (1993) asked: “Why do certain faculty members behave like this [resist bibliographic instruction]” (p. 103)? He supplied several answers to his question:

1. “They are overworked. . . . They really do not have time to learn new things, especially when the proponents of ‘new things’ sound a bit like they are selling aluminum siding. . . .” (p. 103).
2. “They are obsessed with coverage and they have packed their courses with assignments. There is no room for additions or changes” (p. 103).
3. “[They] do not want the sanctity of their classrooms violated. It is not paranoia that drives them to this attitude. There are all sorts of real people, from presidents to trustees to students to vigilante groups on the left and right, who cheerfully tell teachers what should be going on in their classrooms” (p. 103).
4. “Most college teachers are prima donnas. On most campuses, despite their real sufferings and sacrifices, faculty members enjoy an extraordinarily privileged status. They regard librarians as they regard secretaries and ground keepers, as their errand boys and girls, not as their colleagues” (p. 103).
5. “College professors are often not very self-critical. They may be good lecturers and writers, but they are not in the habit of subjecting their own behavior to criticism. . . . We do not like our ignorance to be visible” (p. 103).
Thompson, who perhaps oversimplified to make a point, summarized: "I am talking about tired, overworked, privileged, insulated people who do not want to hear other folks' bright ideas" (p. 103).

In other words, faculty members who hold to the values of faculty culture (a feeling of lack of time; emphasis on content, professional autonomy, and academic freedom; de-emphasis on the applied and the process of learning; and resistance to change) are not interested in "bright ideas" from librarians about bibliographic instruction. In faculty culture, the library is valued as a repository of knowledge—i.e., for its collections. However, this regard may be at the expense of librarians who develop and service the collections. For example, some faculty in a study at the University of Manitoba complained about the number of librarians employed, the need for research/study leaves, and spending money for librarians with higher degrees when these faculty members perceived the collections to be inadequate (Divay et al., 1987, p. 33).

There is, according to Farber (1978): "A big difference between library-minded and librarian-minded" (p. 73). The former, according to Farber (1978): "Know bibliography in and out, . . . know the library collection very well, but don't think of librarians as people to work with" (p. 73). Farber (1974a) aptly described what he termed the "university-library syndrome" of many faculty members:

The faculty member's academic background and training work against an understanding of the proper role of the college library. He has been trained as a scholar-researcher and is not really interested in how his students use the library; he, after all, learned to use it in his discipline and he assumes students can also. (pp. 16-17)

As mentioned earlier, faculty are valued more for what they know rather than what they can help other people learn (Group for Human Development in Higher Education, 1974, p. 14).

In addition, the bibliographic instruction librarian who discusses goals and objectives for the development of the independent lifelong learner or the economic inefficiency of unused library materials is simply not speaking the same language nor seeking to achieve the same goal that many members of the faculty value as part of the collegial culture. Goals and objectives are part of the language of the managerial culture not the faculty culture (Bergquist, 1992, p. 58). For an example of instruction from the bibliographic instruction perspective, see the "Model Statement of Objectives for Academic Bibliographic Instruction" (Task Force on Model Statement of Objectives, 1987).

Librarians as Peers of the Faculty

Part of the problem of the acceptance of bibliographic instruction is that it comes from a group that many faculty do not view as peers—librarians. Even in the early Monteith College Project, Knapp (1966) found they had never been fully accepted as members of the faculty. Some would hold that faculty cannot accept librarians as peers. Wilson (1979) has put
forth her view that librarians have little idea of what it takes to be a member of the faculty. She described the contention that librarians are teachers as an "organizational fiction." She wrote: "Academic librarians as a group are not as well educated as the faculty as a group nor do they have the same level of educational aspiration" (p. 153). However, the lack of recognizing librarians as teaching peers is not simply a matter of low prestige of librarians, Wilson argued. From a faculty perspective, according to Wilson: "There is no basis for recognition . . . There is nothing visible with which a connection can be made to permit or produce recognition . . . between the librarian and his or her occupational role and the faculty member's . . . " (p. 154). Mitchell and Morton (1992) make a compelling argument that librarians are socialized to their profession much differently than faculty are socialized to the professorate. Perhaps as a result, librarians typically do not have a clear picture of the variables that affect faculty opinions of bibliographic instruction.

Kellogg (1987), both a librarian and an academic administrator, in addressing a librarian audience, referred to faculty membership as having "been admitted into a closed, select circle" (p. 602). Several surveys of faculty conducted during the 1980s by librarians at various types of institutions have shown that many faculty members do not admit librarians to that "closed, select circle." These surveys conducted at Southeastern Louisiana University (Budd & Countant, 1981, cited in Oberg et al., 1990); Southern Illinois University, Carbondale (Cook, 1981); University of Manitoba (Divay et al., 1987); and Albion College (Oberg et al., 1990) all found that most of the faculty did not consider librarians "academic equals"—with respective percentages agreeing that librarians were "academic equals" to be 38 percent, 28 percent, 15 percent, and 29 percent (Oberg et al., 1990, p. 223). Oberg and his colleagues (1990) found:

When Albion College faculty were asked to rank librarians' teaching, research, service, and management activities in order of importance, teaching fell at the bottom of the list despite the fact that a program of library instruction [had] been ongoing for a number of years [emphasis added]. (p. 223)

Also, faculty members at both Albion College (Oberg et al., 1990, p. 225) and the University of Manitoba (Divay et al., 1987, p. 29) had trouble differentiating between librarians and the support staff. As might be expected (knowing the values of faculty culture), at the University of Manitoba, the education faculty valued the librarians the highest and the pure and applied sciences the lowest (Divay et al., 1987, p. 31). Also at Albion College, the sciences proved least accepting of the librarians as academic equals, with the studio-oriented Visual Arts department most accepting (Oberg et al., 1990, p. 224).
Sharing the Classroom with Librarians and Bibliographic Instruction

Given many faculty members' low opinion of librarians as academic equals, it is not surprising that several surveys have revealed that many faculty are not interested in sharing their classroom with librarians—or in being held responsible for teaching their students how to use the library. Cannon (1994) found at York University that faculty were least likely to support methods of bibliographic instruction that involved close sharing of their classroom with librarians (e.g., team-teaching with assignments and grading shared between a faculty member and a librarian; assignment[s] jointly designed by a faculty member and a librarian). The only method that received less support was a credit course on library research in the faculty member's department (p. 534).

At Iowa State University, Haws, Peterson, and Shonrock (1989) found: "Faculty members prefer to have the responsibility of teaching library skills taken out of their hands" (p. 202). Thomas (1994) found that nearly a quarter of the faculty respondents at California State University, Long Beach, expressed what she called, a "NIMBY (not-in-my-back-yard) attitude" (p. 216) in that students learned (or should learn) library skills somewhere other than their own courses. Maynard (1990) reported a phenomenon at The Citadel where faculty strongly supported bibliographic instruction but gave lukewarm support to the idea of helping design and use new methods (p. 71).

These and several other studies found that faculty believed use of the library by their students is important along with instruction in the use of the library. However, they neither arranged for librarians to provide the instruction nor did so themselves (Sellen & Jirouch, 1984; Haws et al., 1989; Cannon, 1994; Maynard, 1990). This discrepancy, often frustrating to librarians, can be explained, in part, by examining elements of faculty culture. Given faculty members' unwillingness to share their classroom with their professional colleagues and their emphasis on content, it is not surprising that they are unwilling to share it with someone who is not a kindred spirit and who seeks classroom time to teach about process.

Lack of Time

Lack of time is frequently given by faculty as a reason not to provide bibliographic instruction (Farber, 1992, p. 3; Werrell & Wesley, 1990, p. 174). Thomas (1994) found a disconcerting trend in this area in her two surveys at the California State University, Long Beach. She found in 1982 that only 16 percent of the responding faculty stated that the curriculum was too full to offer library instruction. In 1990, 52.5 percent of the faculty responding selected this answer. Also, in the 1990 survey, 18.1 percent of the respondents (more than triple the percentage from the 1982 study) reported: "They had no idea how their students learned to use the library and felt no responsibility to teach them" (Thomas, 1994, p. 216). So much for any ideas of the inevitability of the progress of bibliographic instruction.
Farber (1993) provided an anecdote of how even the most ardent supporter of bibliographic instruction can overlook it because of time constraints. In writing about a section of a humanities course he taught some years ago at Earlham, he observed:

Each section had a research paper, with a bibliographic session to prepare for the paper. I was responsible for giving the bibliographic instruction for all sections, and I scrupulously got in touch with each instructor to talk about the content and set up the time for a presentation. BUT I FORGOT MY SECTION! Why? I realized later that I was so involved with preparing for the next day’s class, meeting with my students, grading quizzes, choosing the books for next term—so busy with the kinds of activities that demand the attention of every conscientious teacher—that the bibliographic instruction was the furthest thing from my mind. (p. 5)

Farber (1992) concluded from this experience: “Teaching—good teaching—requires lots of time, and we just can’t expect BI to be the major concern of a good teacher” (p. 4). He used this incident to point out the importance of librarians taking the initiative in working with the faculty.

What Makes a Difference?

Several studies have evidence of a relationship between certain variables and faculty support of bibliographic instruction. Hardesty (1991) found at four institutions of higher education in Indiana that neither age, rank, tenure, years of teaching, possession of a doctorate degree, nor discipline made a significant difference regarding faculty attitudes toward the role of the academic library in undergraduate education. He found that institutional influences created differences in attitudes. For example, he found the most positive library attitudes among the Earlham College science faculty and the least positive library attitudes from the Purdue University biology faculty (p. 27). The particular institutional culture may make a difference. However, it is not known if faculty are hired in a particular image or whether they change after being employed at an institution with a particular set of values.

Several researchers have found a relationship between faculty members’ use of the library and the involvement of their students in bibliographic instruction (Cannon, 1994, p. 525; Thomas & Ensor, 1984, p. 437; Nowakowski & Frick, 1995, p. 6). Also, several researchers have found a relationship between faculty members’ publishing output and the involvement of their students in bibliographic instruction (Boosinger, 1990, p. 471; Thomas & Ensor, 1984, p. 437; Cannon, 1994, p. 525). However, Oberg and his colleagues found publication-oriented faculty at Albion College less willing to view librarians as academic equals than did the teaching-oriented faculty (Oberg et al., 1990, pp. 223-24). The vulgarities of faculty culture may lead publication-oriented faculty to value the contributions of the library and the skills needed to use it, but not to highly value those who teach those skills.
Some researchers (Maynard, 1990, p. 73; Nowakowski & Frick, 1995, p. 7; Cannon, 1994, p. 525; Thomas & Ensor, 1984, p. 435) have found a relationship between faculty's view of bibliographic instruction and how they learned library research skills. Those who learned their library skills as undergraduates from librarians, valued more highly bibliographic instruction for their students. Interestingly, Maynard (1990, p. 73) found that only one-third of the assistant professors had learned library skills on their own. Based on this finding, he concluded that faculty library skills would improve in years to come. Farber (1992) also shared this conclusion based on the assumption that, as more faculty have experienced bibliographic instruction as undergraduates, it is viewed less as an innovation by them (p. 3).

Thomas found the lowest ranked faculty (lecturers) least likely to respond that the curriculum was too full for bibliographic instruction (Thomas, 1994, p. 213). In contrast, however, Davis and Bentley (1979) found those faculty members with less time at an institution as the most dissatisfied with the library. This difference may be explained in that the lecturers at California State University, Long Beach, may be heavily involved in teaching and less immersed in research for tenure. The institutions included in the Davis and Bentley study were three small private institutions, and new faculty may be less familiar with the library and also not find the specialized resources in it that they found in the library of their graduate institutions.

Oberg and his colleagues (1990) found: "The greater the faculty contact with the library, the higher the rank given librarians" (p. 225). Cook (1981) reported "an increase of the feeling that librarians are indispensable . . . as the faculty approached professorial rank" (p. 217). At the University of Manitoba, those faculty who had contact with librarians rated higher the subject specialization of librarians and valued advanced degrees for librarians (Divay et al., 1987, pp. 31-32). Major (1993), in an interesting study of "mature" librarians, found "self-confidence in the librarian role" as a major contributor to faculty acceptance of these librarians as faculty colleagues (p. 468).

**WHAT CAN BE DONE?**

It is relatively easy (and not without some justification) to portray faculty as individuals with "fragile egos" (Farber, 1992, p. 3) who "feel threatened" (Weimer, 1990, p. 17) and are "defensive, [and] . . . condescending to librarians" (Farber, 1978, p. 2). They are accused (again with some justification) of filling the academic libraries with a "tremendous volume [that] contains much repetition and near-repetition" (McCarthy, 1985, p. 144) yet are unable to articulate how these items relate to undergraduate education (Hardesty, 1986). The result is highly distinct collections specific to individual institutions, probably based on
the specialized interests of the faculty (Hardesty & Mak, 1994), that are "rarely ever used by anyone" (Gore, 1982, p. 691; also see Hardesty, 1981, 1988; Kent et al., 1979). However, this is an oversimplification. Many faculty do create imaginative and educationally productive assignments involving student use of the library, consult with librarians in the development of those assignments, and invite librarians into their classrooms to provide instruction and guidance to students in the use of the academic library.

Nevertheless, many librarians view the library as a tremendous educational resource that is not fulfilling its potential. They believe that much more could be accomplished if only the faculty would cooperate more with them. In the midst of scholarly wealth, there is the perception of intellectual poverty because students do not know how to use academic libraries. Increased application of technology may not resolve this predicament. The irony is, as noted by Lipow (1992), "that though more information than ever is conveniently available to the information seeker, they have less access. . . . [O]n the one hand we have increasingly sophisticated tools providing greater availability of collections; on the other hand, users are able to do less sophisticated searching on their own" (pp. 9-10).

The solution typically given to this problem is to exhort librarians to take more initiative to involve the faculty (McCarthy, 1985, p. 142; Maynard, 1990, p. 73; Thompson, 1993, p. 104). Biggs (1981) even recommended that librarians are at fault because they do not "confront" faculty. She wrote: "A nearly insuperable barrier is created by librarians' reluctance to confront [emphasis added] their clientele" (p. 196). However, librarians are seldom in a position to confront the faculty effectively. As Carlson and Miller (1984), observed: "Librarians may insist on a library assignment as a prerequisite for a classroom presentation, but they can hardly insist on a 'proper' attitude and an 'approved' assignment" (p. 487). Powerful forces within faculty culture maintain the faculty position of control of, and resistance to, bibliographic instruction. Librarians seldom operate from a position of strength in their relationships with the faculty.

Proponents of bibliographic instruction seeking a "royal road" for faculty adoption of bibliographic instruction will be disappointed. Diffusion and adoptions literature suggests: "Curricular changes are made ever so slowly" (Cross, 1976, p. 20). Kindergarten is an example. After its initial introduction into the United States, more than fifty years elapsed before schools widely adopted it during the 1930s and 1940s. Some experts estimate in public education a fifty-year time lag in education change. Therefore, no easy or novel solutions will be provided here, only a better understanding of how to apply those solutions already provided by others.
Faculty must be involved for the success of bibliographic instruction. Therefore, librarians must continue initiatives they have already taken and to expand on them to involve the faculty more. It has not been, nor will it be, easy given the nature of faculty culture. From his perspective as a biology professor at Earlham (and fully supportive of bibliographic instruction), Stephenson (1980) advised:

Library educators must be sensitive to these insecurities in their own faculty members. They need to be sensitive to them and still have the maturity to put up with overbearing academic-intellectual egos and with the attitudes of superiority that most individual faculty members exhibit. (p. 82)

A sensitivity to faculty and our own values is essential. The burden, fairly or not, remains on librarians.

Much of what has been accomplished and will be accomplished will be through one-on-one informal contacts between librarians and faculty members. While some observers question the longevity of such informal programs (Lynch & Seibert, 1980, p. 137), the Earlham College experience has shown how successful such interactions can be. Hall (1993), a professor of politics at Earlham College, demonstrates her response to librarians who have taken the initiative to become interested in her students and her teaching at Earlham College:

The librarians—the bibliographic instruction staff at Earlham—are colleagues who display genuine interest in my students. They always are interested in what my students are doing in the classes that I am teaching. In fact, the librarians may be more interested than other faculty members are in the process of my students' learning. I may talk with colleagues in my discipline about common theoretical problems. I am more likely to talk with the library faculty about how my students are progressing on a given assignment. (pp. 51-52)

Obviously this is easier to do at a small college that emphasizes teaching than at a large institution (Kirk et al., 1980, p. 45). Nevertheless, Major (1993) has shown how librarians at larger institutions can be accepted by the faculty as colleagues. She noted that half her "mature librarians" were "involved in bibliographic instruction at some level" (p. 465).

At another level, we need to follow the advice of the late Bill Moffett (1989) and "stop talking just to ourselves" (p. 610). As Moffett wrote: "Academic and research librarians do a splendid job of communicating what they're about . . . but what we write is seen by almost nobody but other librarians" (p. 609). Jacobson and Vallely (1992) found fewer than seventy-five articles in nonlibrary journals in a recent ten-year period "that mentioned library instruction or described courses requiring some form of structured library research in a college or university setting" (p. 360). Only about half these articles had been written by librarians and only about a quarter had been written jointly by librarians and faculty (p. 360). Obviously librarians need to reach out more to the faculty through the disciplinary literature.
No doubt librarians can be discouraged in their efforts to persist in the face of some strongly held values of faculty culture that inhibit bibliographic instruction efforts. However, librarians need to keep in mind how much has been accomplished. After a long history, bibliographic instruction appears to be firmly adopted by the culture of academic librarians. With this as a foundation, librarians can concentrate more now on the culture of the faculty. Baker (1989) advised librarians: "By trying to understand faculty, as opposed to perpetuating the stereotypes each might have of the other, we can assume a more positive direction for our idealism" (p. 326). Idealism has long been a trait of bibliographic instruction librarians and, combined with a better understanding of, and sensitivity to, faculty culture, bibliographic instruction may become part of the culture as it has become a part of the culture of librarians.

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ADDITIONAL REFERENCES
Forty-Five Years After Lamont: The University Undergraduate Library in the 1990s

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ABSTRACT
In 1949, Harvard's Lamont Library opened, embodying the idea that undergraduates could best be served from their own library. The undergraduate libraries also protected the collections and freed reference staff of research libraries from the effects of heavy undergraduate use. In the 1970s and 1980s, bibliographic instruction programs developed and expanded. In the 1990s, libraries are under pressure from budget cuts, staff reductions, technological change, and the higher expectations of undergraduates and their parents. Some undergraduate libraries have integrated teaching with new technology or explicitly assumed the role of gateway to the collections of the larger library while maintaining separate physical facilities for undergraduates. Other undergraduate libraries have merged with, or been absorbed into, the library system, disappearing as separate entities. The arrival of the virtual library is encouraging the centralization of capital and the decentralization of intellectual work. Research and debate on the effects of these changes on the education of university undergraduates is needed.

INTRODUCTION
When Harvard University's Lamont Library opened in 1949, it was the first library designed specifically for the undergraduates of a research university with collections and services housed in a separate building. Forty-five years later, undergraduate libraries in research universities face transitions on a much larger scale. The tools of research, teaching, and
scholarship are changing; the way undergraduates use libraries is changing; and the resources and services they use are changing. The scholarly model of the past 500 years—the physical distribution of ideas and information stored and expressed in printed words on paper—is being joined to the future, to the era of hypertext and multimedia documents stored in digital form and distributed almost instantaneously on a worldwide communications network. At the same time, the performance of research-intensive universities is the subject of public debate with the value of an undergraduate education as one major topic. If an undergraduate education at a major research university is worth the price, the adequacy of library service for undergraduates is an important factor for students and their families to consider.

The establishment of Lamont Library marks a milestone in the development of library services and collections for university undergraduates. The opening of Lamont, at a time of major expansion that established research-intensive universities in the United States as the finest in the world, accelerated the end of single central libraries as the norm in research universities (Froomkin, 1993, p. 50). The division of main libraries into research and undergraduate libraries was a first step in a long process of decentralization and distribution of central library collections into separate buildings. The construction of separate library facilities for rare books and manuscripts, regional collections, and storage of low-use materials has continued into this decade (Kuhn, 1969, p. 188; Wilkinson, 1971, p. 1568).

**DEVELOPMENT OF UNDERGRADUATE LIBRARIES**

The establishment of separate undergraduate library buildings was an attractive administrative choice for many reasons. Research collections of printed materials became so large that they were difficult to manage physically and were overwhelming to many novice users. When rapidly growing central collections required additional shelf space and the construction of new buildings to house them adequately, library and university administrators split central collections and services into two units for the two major user groups—undergraduates on the one hand, and faculty and graduate students on the other—and built a new building for one. The new library building could be much smaller than the one required to house the collection for both groups. Keyes Metcalf, the librarian at Harvard, recognized the difficulties undergraduates faced when using Widener Library, with a collection, building, and services designed for faculty and graduate research, and that housed library collections which were quite small, and he successfully promoted the construction of a new building for undergraduates. When other universities emulated the Lamont model, it sometimes made more sense for them to construct a new research facility. But in either case, following construction, the
collections were divided and partially duplicated, and the appropriate services were set up in each building. At many universities, research collections were then closed to undergraduates. Braden (1970) carefully documented this process at Harvard, Michigan, South Carolina, Indiana, Cornell, and Texas.

By the late 1950s, at Cornell University, the old central library, built in 1891, was overflowing with more than 800,000 volumes in a space built to hold half that number. A new building, Olin Library, was constructed for the social sciences and humanities research collection. When Olin opened in 1961, the old building was remodeled, renamed Uris Library, and reopened in 1962 with 42,722 volumes of the projected 50,000 basic collection (Braden, 1970, p. 103; Wilkinson, 1978, pp. 143-44).

By 1970, separate undergraduate collections and services were a well-established feature of many university library systems. Kuhn lists nineteen new buildings constructed after Lamont opened. The library literature of the late 1960s and early 1970s is filled with articles, books, symposium papers, and at least two dissertations (Braden, 1967; Wilkinson, 1972) documenting and assessing the effectiveness of the movement. Wilkinson, who headed the Uris Library from 1962 to 1967, grouped undergraduate library services into seven functions or collections: study hall, social center, reserve book dispenser, browsing collection, listening facility, visual materials center, and reference services (1971, p. 1568). The undergraduate library differed from the traditional central library in significant ways. It provided open access to a carefully selected core collection and special services to undergraduates in one location, including new services not usually available in research libraries of the time (e.g., audiovisual and instructional services), and it was constructed or remodeled with undergraduate use patterns in mind (Braden, 1970, p. 2). The popularity of this strategy with undergraduates was measurable. Book circulation to undergraduates increased, large course reserve collections were established and used heavily, and building traffic included not only students seeking quiet study space away from the noise of the dormitories but also those who wanted to see and be seen. Nearly thirty years after it opened, a 1990 use survey showed that Uris Library is still popular, accounting for 25 percent of the foot traffic in the sixteen-unit Cornell University Library (Murray-Rust, 1993, p. 1). The change was also popular with faculty and graduate students, who appreciated having more of the research library's collections, study carrels, and reference librarians to themselves.

In the beginning, instruction in undergraduate libraries consisted of one-on-one teaching during reference encounters and orientation tours for incoming first-year students. The instructional role of the undergraduate library was greatly developed and extended in the 1970s and after by proponents of bibliographic instruction like Evan Farber at Earlham College and Patricia Knapp at Monteith College. Virginia Tiefel at Ohio
State University took the lead in adapting college-library models of bibliographic instruction to the university environment. Instruction of undergraduates in the research process and the structure of disciplinary literatures became a central service of undergraduate libraries.

By 1976, the undergraduate library movement had peaked. There were twenty-five separate university undergraduate libraries; another fifteen undergraduate libraries shared buildings. Seventeen had come and gone since Braden's 1965 dissertation survey, and signs of reevaluation were appearing. In an article in *College & Research Libraries*, Wingate (1978) questioned the continued usefulness of separate undergraduate libraries, citing the difficulty of meeting undergraduate research needs with a core collection and the expense of duplicating services and collections. He also questioned the wisdom of segregating undergraduates from research collections (pp. 30-32). In a 1982 symposium on the state of university undergraduate libraries, Irene Braden Hoadley, then director of the Texas A & M University Library, called the separate undergraduate library a dinosaur whose time of usefulness had passed (Person, 1982, pp. 5-6).

The symposium responses to Hoadley's essay illustrate the shakeout of less viable programs and the functions that successful undergraduate libraries were emphasizing: instructional services and, to a lesser extent, course reserve and audiovisual services. In successful libraries, bibliographic instruction became a primary function as the service focus began to shift from place to process, from giving students a place of their own to preparing them for the process of lifelong learning. Librarians working with undergraduates developed a variety of innovative programs to teach basic bibliographic and critical thinking skills to new students and to orient upper-level students to the literature of their major. One result of librarians' increased involvement in instruction was a greater awareness of the low status of undergraduate teaching in the research university. In one symposium response to Hoadley, Shelley Phipps observed that "graduate and faculty research, not undergraduate education, has become the raison d'être of many universities. Teaching undergraduates is no longer the main responsibility of the faculty; research, publication, and recognition have usurped this function" (Person, 1982, p. 10). Her concern was soon taken up by other voices both within and outside the academy. While instructional activity grew in importance in the 1970s and 1980s, other services and collections continued to be provided. Stack and reserve collections supplemented the textbooks and paperbacks students bought for their classes. Audiovisual collections grew and expanded into new formats—cassette audio and videotapes and, later, compact and video disks. The faculty began putting video materials on reserve for individual viewing and class showings.

By the mid- to late 1980s, a host of changes surfaced that has produced the turbulence and excitement of work in a university library today. Higher education, for many years an unquestioned good in the
United States, has come under increasing public criticism. The financial resources of research universities are under pressure. Technological developments present new and constantly changing opportunities and costs for everyone engaged in scholarly teaching, research, publication, service, and support.

**FINANCIAL CONTEXT**

Financial pressures faced by research universities are forcing difficult choices. Since the late 1980s, research universities have been cutting back academic and administrative operations (McMillen, 1989, p. A21). The enemy has not been inflation but a complex of factors that have increased the cost of running universities and reduced available income. In an article on the role of financial aid in maintaining a diverse student body, Ehrenberg and Murphy (1993) outline the following sources of financial pressure on research university budgets: reduced annual increases in tuition, relative increases in faculty salaries, more conservative endowment practices, deterioration of physical plant, increased library costs for international materials, the expenses associated with university-wide computerization, decreased government support, more competition for student applicants, and substantial increases in financial aid to students (pp. 66-67). To these factors can be added increases in benefit expenses, especially for health care.

The three major sources of revenue—tuition, endowment income, and government support—are all down or increasing at a slower rate. A public outcry over tuition increases that consistently exceed the rate of inflation and the rate of personal disposable income growth in the United States has led boards of trustees to reduce annual increases. Until the 1980s, tuition increased at roughly the same rate as inflation and personal income. During the 1980s, faculty salaries went up by 20 percent over inflation in a more competitive labor market, and, at the same time, the financial aid costs of admitting and retaining an economically, ethnically, racially, and geographically diverse student body increased. Since 1980, tuition increases have exceeded growth in personal income, effectively increasing the financial aid needs of students and their families.

In an effort to keep up with high inflation rates and avoid equally large annual increases in tuition, many private institutions overspent their endowments in the 1970s, reducing the total rate of return on their investments. By the late 1980s, Cornell had reduced the annual amount of endowment used for income from 6 percent to 4 percent to reverse the erosion of endowment principal. State and federal support for students has leveled off as other social needs have gained higher priority (e.g., health care and deficit reduction). In the wake of the scandal over alleged improper overhead charges at Stanford University, federal support of university research through reimbursement of indirect costs has
decreased an average of almost 6 percent from 1991 to 1994 at major research universities. Each 1 percent drop can mean as much as $1.5 million in lost income (Cordes, 1993, p. A29).

Within university library systems, similar priority shifts have become necessary. Librarians are well aware of the increased cost of international serials subscriptions. The proliferation of titles and large annual price increases, in part due to unfavorable exchange rates, has resulted in several rounds of serials cancellations and continues to shift the balance of materials expenditures away from monographs toward serials. Undergraduate collections have largely been spared these problems since most of their serials and monographs are published in North America. In addition, the strong emphasis on monographic titles available in paperback editions has kept the cost per title down.

Computerization is another matter, however. Computer technology has grown more central to library work for over a decade, a trend that shows no sign of abating. The capital costs of hardware and software and the staffing costs of maintaining, programming, and upgrading computers consume an increasingly large percentage of library budgets. Upgrading campus networks with fiber-optic cable, extending the network to offices, dormitory rooms, and off-campus users, and the seemingly continuous hardware and software upgrades are significant long-term expenses for universities. On the other hand, the federal government continues to provide major support for improving the national networks that link campuses to each other and to the rest of the world. Once the local network is in place, access to the wider world is heavily subsidized.

The greatest expense of the university, as well as its greatest resource, is highly educated and highly trained people. Because personnel costs are a large part of library budgets, this is also the only area where really significant cuts can be made when a large budget cut is mandated. In the current financial climate at research institutions, layoffs and selective excellence are part of the strategy of institutional survival. Although strong programs and services may be further strengthened, the weak or politically vulnerable ones will be cut. In most libraries, no new staff will be hired for the foreseeable future. In some, staffing is being reduced, and library services and collections are being combined. The staffs and collections of separate undergraduate libraries are prime candidates for consolidation.

At the same time that research universities and libraries are struggling to respond effectively to these financial pressures, two additional developments are strongly affecting undergraduate education and undergraduate libraries: the rise of new technology for the communication and dissemination of scholarly information and calls for a renewed emphasis on the importance of teaching. These three factors—increasing financial pressures; the rapid growth of networked, hypertext,
multimedia systems; and calls for a stronger commitment to teaching—define the current environment for librarians working with undergraduates in the research university.

The establishment of separate buildings, services, and collections was the first systematic response to the information and learning needs of university undergraduates. The second was the development of instruction programs to teach students the research process—how to use libraries to find and evaluate information and ideas. A third change is well underway—the development of Boolean-searchable computerized catalogs, indexes, and full-text databases; the networking of these resources around the world; and the arrival of hypertext, multimedia capability on the Internet and on computers connected to it. Each development has been built on the previous one. Now computer professionals, librarians, faculty, government and commercial providers, and a host of free-lance denizens of the Internet are engaged in realizing the potential of a new worldwide information system. Librarians must think to the future and stay ahead of these rapidly accelerating changes.

TECHNOLOGICAL CHANGES

A virtual library is being constructed, one that exists within and beyond the physical library. Just as library buildings, collections, and services were designed and adapted for undergraduates, now the work of undergraduate libraries is to maintain carefully what is useful in the old physical system even as the virtual system and its physical components (computers and networks) are created and elaborated. Librarians have been engaged in building and integrating the virtual library for some time, but initially as an extension of the print era—databases of searchable citations whose primary use was to locate print materials on paper or in microformat. The combination of computer software, hardware, and networks forms the most powerful tool yet for organizing and accessing information and ideas. Although these tools are often designed and developed for nonlibrary purposes, librarians are taking advantage of the technology to perform traditional library tasks more effectively. For librarians working with undergraduates, the enhancement of teaching and learning made possible by computers is truly exciting. The livelier periodicals in higher education are full of discussions of the new teaching and learning possibilities in undergraduate education: hypermedia learning (Jensen, 1993), virtual classrooms (Sliwa, 1994), and “the library of the (not-so-far-distant) future” (Lyman, 1991). Even the term paper, the learning tool that has brought librarians and classroom teachers together for decades, is poised to make the jump to hypermedia (DeLoughry, 1994).

The word "hypermedia" is a shortened form of hypertext and multimedia. Hypermedia documents are the building blocks of the virtual library and classroom—the whole system of authoring, storage, retrieval, and interaction that constitutes a new arena of teaching, learning, and
scholarship. The virtual library is the collection of documents and files in digital format that rests in optical and magnetic memory. These documents and files can be speedily transferred around the world and simultaneously viewed or read. They can appear as text, still images, moving images, sounds, and any combination of these (the multimedia aspect of hypermedia). Software allows these digitally formatted documents to be combined, divided, stretched, and colored in either two or three dimensions. They can be linked internally to another part of the same document or externally to any other networked document (the hypertext aspect of hypermedia). The digitized information in the document can be printed, displayed on a monitor, projected on a screen, and played from speakers, headphones, or earphones.

The tools of the virtual library allow librarians working with undergraduates to expand the two functions that have become most important in the years since Lamont opened. The first of these functions is bibliographic instruction—teaching students how to navigate the information systems supported by academic libraries. The second function is selecting and making available core collections of documents that represent the knowledge and insights produced or preserved by scholars, researchers, artists, and writers. Librarians have, for the most part, delivered that instruction in person and housed those collections in a physical building. In the virtual library, the classroom, the point of use, and the library become one in a computer. The core collection which librarians select, organize, and point to exists there, too.

This is not to say that the virtual library will completely replace the physical library or that the digital document will replace the printed document in the near future. For some time yet, perhaps indefinitely, the physical and the virtual will exist side by side and interact with one another. But one thing seems clear: although printed documents like books can be created directly from digital documents, only some digital documents can be adequately represented in book form. Books retain their ease of use and portability, but the printed word, by far the main constituent of most books, favors specific styles of learning, as does the way knowledge is currently documented and taught in the academic world. Digital documents offer students and teachers a much wider choice of ways to learn and teach and new ways to access knowledge. Visual learners, those who learn better from model-based reasoning, dyslexic students, and students well ahead of or behind the level of instruction currently provided in the classroom and at reference desks, could be aided by hypermedia instruction delivered on a computer in their own rooms, in computer labs, or at public terminals in libraries—anywhere there is a computer. Sliwa (1994) calls the variety and individualization that is possible with computer-based instruction "mass customization." He suggests that it is best used to replace some lecture/demonstration methods for large classes.
and to free instructors for more one-on-one or small-group interaction with students (pp. 9-10). With computer-based hypermedia instruction, the individual determines the pace and direction of her learning, and she can leave and return anytime. Research indicates that the most effective teaching and learning strategies involve a mix of interactions with people and with computers in a variety of settings (Terenzini & Pascarella, 1994, pp. 29-30).

The case of electronic mail is an example of the importance of mixed interactions. Although communication over networks using electronic mail has grown for academic work, particularly over long distances, e-mail lacks some qualities that continue to be important in human relationships, particularly the complex nonverbal cues and responses that in-person contact provides. The anxiety that some students experience when they begin making the transition from smaller secondary-school and public libraries to a university library system is best dealt with through the multidimensional contact that is possible in person.

Existing core collections of print texts will continue alongside virtual documents as well, and librarians will need to be adept at selection in both areas. Although some projects are underway to convert, retrospectively, print documents to digital form, the number of years involved in converting just the citations representing print documents to digital form suggests that print and microform collections will continue to represent a whole era of human scholarship and culture for a long time to come. But as more texts are produced and archived in digital form, the overall balance of library holdings will inexorably shift toward the virtual environment.

To straddle effectively the worlds of the physical and the virtual library, librarians must develop skills in instruction, organization, and selection in the virtual library. The development of software for creating, organizing, and browsing World Wide Web sites on the Internet has made the virtual library an everyday reality for many librarians, faculty, and undergraduates. Creating and publishing hypermedia instructional documents in the virtual library requires three software packages on an adequately powerful personal computer hooked to a campus network and the Internet. The first piece of software needed is a Web browser (e.g., Netscape, NCSA Mosaic, Cello, MacWeb) to find and display hypermedia documents. Documents can be located on another computer hooked to the network or on the same computer's hard disk. The second piece of software needed is a hypertext editor for writing hypermedia documents and inserting the textual tags that allow hypertext links to other documents; adding image, video, and sound files; and formatting text. Although hypermedia documents can be written with word processing software, hypertext editors smooth and support the process by providing preformatted text tagging and other helpful features. To make the docu-
ments available on the network, server software is required. This gives the hypermedia documents an address on the network and "serves" them—makes them available to anyone else with browser software and a network connection.

At Cornell, Web browser software is now distributed free to students, faculty, and staff as part of a software package that allows menued access to a variety of network resources, including the online catalog, periodical indexes, OCLC and RLIN, course schedules, grades, bursar accounts, and a local Gopher client. Students can access a variety of World Wide Web servers containing hypermedia documents from libraries, departments, and an individual's computer, as well as Web sites from around the world via the Internet. Not all the dormitories are networked yet, but as many as half the first-year students in library instruction sessions use Web-capable networked computers in their rooms.

Along with hands-on instructional labs in the library, librarians are developing an instructional presence on the network in the form of hypermedia-based tutorials. These tutorials teach research strategies: how to search for books and periodicals, evaluate and cite resources, and use Internet resources. Documents in tutorials can be linked to each other, to other instruction documents on the network, and to online catalogs and periodical indexes for live searching. In addition, glossaries of terms can be linked to significant occurrences of those terms in the tutorial text. Tutorials can also be linked to online information and reference services using e-mail and customized reference, purchase request, and interlibrary loan forms.

Networked tutorials are available at any public access terminal, lab computer, or personal computer that has Web browser software and can be accessed during group sessions in the hands-on instruction laboratory. The documents can be changed, updated, and restructured from the librarian's office computer. Teaching faculty are also creating their own Web sites for classes. Librarians participate by creating hypermedia documents for the class Web server. These documents provide an annotated list of sources, search suggestions, and comments. If the librarian's computer is also a server, the class instructor can link to it from her class server. Alternatively, the librarian e-mails his Web documents to the instructor as attachments. The instructor then transfers the files to the computer serving her class, and all students have access to the information. As scholarly communication and publication moves into the digital format and onto the network, the teaching of undergraduates will follow. Each venue has its own rules for access and navigation, and each can be used to teach and learn about the other.

Web browser software can also be used to assemble and organize hypermedia documents of interest to undergraduates from Web sites around the world. The selector in cyberspace, the virtual world of Web
sites on the Internet, can scan listings of new sites on the Internet and follow promising hyperlinks to new document collections. Selectors can also use the various search engines available for finding Web sites. Criteria for selection can be based on the criteria for print and audiovisual materials. Links to appropriate sites can be assembled by the selector, organized by subject, and briefly described. Selectors can also solicit online suggestions from other Web explorers and library users, including undergraduates. Other denizens of the World Wide Web are creating subject guides to Internet resources by selecting, indexing, and linking to Web sites. Several search engines are available that allow keyword searching of portions of networked Web documents. Much work remains to be done to improve the precision of Internet searching by using standard document descriptions and formatting.

**Organizational Changes**

The financial pressures and technological changes in research universities are stimulating organizational change. In a time of limited resources and new technical possibilities, libraries must adapt or risk becoming irrelevant. An informal survey of changes in the structure and services of university undergraduate libraries conducted using UGLI, a listserv for the Undergraduate Libraries Discussion Group, indicates that organizational responses vary widely. Libraries are responding by changing staffing patterns and upgrading the technological infrastructure. The effect of these changes on services and collections is difficult to assess.

Recent structural changes seem to fall into five categories:

1. construction of entirely new, technologically sophisticated library buildings that are not called undergraduate libraries but are probably used primarily by undergraduates. Examples: Leavy Library (University of Southern California) and University Center Library (George Mason University);

2. refurbishing and technological upgrading of existing undergraduate libraries. Examples: Lamont Library (Harvard University) and the undergraduate libraries at Ohio State University and the University of Michigan;

3. merger with another library unit while maintaining a separate building, service points, and collection. Example: Uris Library (Cornell University);

4. disappearance of the undergraduate library as a separate building, collection, and staff. Examples: Meyer Library (Stanford University) and Sinclaire Learning Resources Center (University of Hawaii at Manoa);

5. staff reductions with no other major changes. Example: the undergraduate library at the University of California, San Diego.
The variety of these responses suggests that there is no typical organizational response by university libraries to the rapidly changing environment. Current changes in collections and services for undergraduates in research universities have not received the intensive scrutiny that accompanied the changes following the opening of Lamont. The best documented of the recent transitions may be the changes at Harvard's Lamont and Cabot libraries and the reorganization of Widener Library (Dowler, 1992; Hightower, 1993; Lee, 1993). Although some institutions are upgrading services and facilities, in others there is justifiable concern over the negative effects on the education of university undergraduates caused by the cutting or merging of the staff, collections, and services previously dedicated to undergraduates.

The merger of Olin and Uris libraries at Cornell provides an example of how one institution with a separate undergraduate library has chosen to change its deployment of staff and services in response to technological and financial pressures. The historical context of the establishment of Uris Library—its planning, opening, and first seven years of use—has been extensively chronicled by Wilkinson (1972, pp. 139-73) and Braden (1970, pp. 93-115). During the 1980s, Uris followed the general pattern of university undergraduate libraries by developing a strong instructional program. The current reorganization began in January 1993 when the head of the Uris Library moved on to another position. The library administration used the opportunity to restructure public services in Uris and Olin libraries. A committee of Olin and Uris librarians was appointed to recommend a process for merging public services (reference, instruction, circulation, course reserves, stack management, administration, and part of collection development) previously performed separately in each library. One stipulation of the discussions was that the vacated position of head of the undergraduate library would not be filled in the new organizational structure. The report of this committee recommended that the merger of access services functions (circulation, course reserves, and stack management) begin immediately under the current head of access services in Olin. This group also recommended the formation of a second committee of all the reference and instruction librarians in both libraries to meet in Fall 1993 and to recommend how services and staff should be reorganized.

The second committee met throughout Fall 1993 under the leadership of one of the reference librarians. This committee divided into subcommittees on services, collections and technology, space utilization, and staffing issues to analyze the current program and to recommend changes for the future. In January 1994, the committee recommended the establishment of a new reference service unit across both libraries. The recommended organizational structure consisted initially of four interest groups—collections, reference/information, instruction, and
technology—each coordinated by a librarian in the division. The coor-
dinators would work with the reference head to oversee services, deter-
mine priorities, and facilitate communications.

The committee also recommended more extensive use of parapro-
fessional staff at service points in Uris, freeing librarians for other duties. Other recommendations included building a state-of-the-art hands-on instructional facility; merging the reference staff and programs of the two libraries; developing an outreach program for upper-level undergraduate instruction; and writing a single collection development statement for the reference collections.

Administrative responsibilities that were divided between libraries before the merger have been consolidated. The organization is considerably flattened, with the eleven librarians reporting to the head of reference. One result is a more departmental atmosphere with considerably more autonomy for individual librarians. The increased autonomy has contributed to the successful development of several initiatives to strengthen instruction for undergraduate and graduate students using computer technology. With fewer heads and more peers, consultative relations have been strengthened at some sacrifice to speed of task execution. Even with increased use of e-mail, working in one larger group informally divided into smaller working groups, rather than in the two smaller departments of the pretransition days, can be frustrating. It takes longer to accomplish some tasks in a larger group of peers than in a smaller, more hierarchical, structure; it is harder to hold individuals accountable.

Another major outcome of the merger has been increased fiscal and staffing flexibility. With the income and budgetary resources of the public service functions in two libraries combined, the director and deputy director have more flexibility to deploy capital and more resources to focus on major projects. This has resulted in a significant upgrading of hardware for office and instructional use. A new hands-on instructional facility is finished and is being heavily used by undergraduates; another facility will be completed shortly. The new facility doubles as a public computer lab when it is not reserved for instruction, adding twenty machines to the existing, and very heavily used, twenty-eight computers in a public lab in an adjacent room. Learning in a hands-on environment is very popular with students and has enhanced the effectiveness of the extensive instruction program of the combined libraries.

After years of a stable staffing environment in both libraries, the merger of reference and access service staff has resulted in an organization more responsive to change. New assignments and informal work in groups to address specific issues are becoming more common in the larger arena of the new division. Although people accustomed to the stable environment feared the changes, including the breakdown of the sepa-
rate subcultures in the two libraries, there is a growing awareness that the merger meets a need for ongoing organizational and individual adaptability to deal effectively with the new opportunities presented by technological advances and the demands of repeated budget reductions.

Another significant change has occurred because of the merger—a reduction in the quantity and quality of traditional reference service for the users of the Uris Library. Before the merger, Uris librarians worked up to twice the desk hours of the Olin librarians. Long desk hours and large teaching loads were hallmarks of the organizational culture of the old Uris environment. To equalize the desk loads in the new division and to respond to one round of budget cuts, the lowest-use Uris reference desk hours were trimmed, and information assistants were substituted for professional coverage one week night and Saturday afternoon. Paraprofessional staff also replaced a librarian where two librarians had been providing double afternoon coverage. Paraprofessional staff have done excellent work, but clearly some expertise and experience that was previously available to students during those times has been lost. The immediate referral of questions beyond the scope of paraprofessional knowledge and training is often not possible, a situation that can be only partially alleviated by improved training and communication. Along with the decrease in service hours and the general level of expertise and experience at the service desks, more librarians are working at multiple service points and teaching a larger variety of classes. Sharing skills working with specific user groups and the sharing of information about local resources is increasing. As a result, referrals are more informed. The reduction in desk hours for Uris librarians has allowed them to increase significantly their involvement in, and leadership of, library-wide groups. They have also used the additional off-desk time to plan and develop services in the virtual library.

The Olin-Uris merger at Cornell illustrates one kind of institutional response to the forces that are pulling separate units of a decentralized library system into closer contact with one another. Foremost among the catalysts of this change is the centralizing effect of systemwide computer systems. The arrival of the online catalog and its circulation, acquisitions, and serials subsystems has encouraged a shift toward organizational centralization and procedural uniformity. Differences in circulation and technical processing procedures across units of the library tend to be highlighted by common use of centralized hardware and software. These differences also interfere with efficient service delivery. In addition, administrators have to amass sufficient capital to acquire the hardware, software, and network access necessary to implement campuswide information systems. Similarly, computer expertise has to be hired or contracted centrally for system-wide maintenance and development. Computer professionals work on a whole system, not the terminals in one unit of the
library. The difficulty of concentrating the capital necessary to subscribe to and mount networked indexing and abstracting services in an environment where acquisitions money is decentralized into small pots controlled by dozens of selectors has brought the centralization issue home to collection development administrators. The high per-title cost of computer-based indexing and abstracting services requires either more extensive cooperation among selectors or the diversion of some discretionary resources into a central pool for subscribing to networked titles. One response to tightening collections budgets is to reduce the duplication of print titles in circulating collections of separate library units, thereby increasing the centralization of print resources on a given subject in one unit. System-wide online catalogs make duplication more apparent by displaying all the holdings for one title; they also make print titles at all units more accessible in every unit. Hence duplication seems less necessary. Reducing duplication of print titles saves money in the collection budget, and library users bear the increased cost of traveling among physically separate units to collect the materials they need.

The reality of a single online catalog for all the library's resources, despite their physical location, has increased undergraduate awareness of, and use of, the resources in subject collections in research libraries. This has spread the demand for undergraduate reference and instructional services across the library. Thus the online catalog is providing an opportunity, welcome in some units but not in others, to help undergraduates use the riches of specialized collections. Whether this change is an overall gain for undergraduates depends on the leadership and support of library administrators for serving undergraduates well across the system. Such a change will challenge academic departments that prefer to reserve the use of subject collections for faculty and graduate students. Effective service to undergraduates also requires a higher level of communication, awareness, and referral among individual units, a process aided by e-mail and the development of library- and campus-wide electronic lists and discussion groups.

The organizational changes necessary to adapt to an environment of constant change inevitably alter library services for undergraduates. As library administrators struggle to assign priorities to competing demands for limited resources, some resources must be allocated to the process of learning how to take advantage of the opportunities created by technological changes. At Cornell, some staff time has been transferred from providing direct services to implementing a service structure for the future. The direct service losses are apparent at the margins of traditional reference service: reductions in coverage of off-peak hours and changes in the staffing mix at service points. The gains will come in the form of increased effectiveness in reference and instruction in the networked environment. Integrating hands-on computerized instructional facilities
into instructional programs for undergraduates requires the development of new teaching strategies and new instruction materials. Librarians are also busy writing networked hypermedia instruction and reference tools that establish instruction and reference services in the virtual environment. New methods of digitizing and networking the reserve collections heavily used by undergraduates are under development.

The reference and stack collections used by undergraduates are evolving as well. Libraries are cutting subscriptions to print indexes and adding networked versions. Although the retrospective coverage of online indexing and abstracting services is still limited, each passing year makes that limitation less significant as the backfile of indexing builds. Reference monographs are less available in digital form. The bulk of the information and ideas that support the undergraduate curriculum is still available only in print form—in books and periodicals—but full-text, current-affairs databases have begun to erode the primacy of print, because these can deliver time-sensitive information more quickly. Multimedia versions of encyclopedias and dictionaries are more available. Publishers of scholarly journals and monographs are beginning to explore the unfamiliar terrain of the virtual library.

Substantial changes in the format of circulating collections await the decisions of scholars, libraries, and publishers on the future form of academic publication in the networked hypermedia environment. As all three groups explore, debate, and negotiate the future, foundations, universities, and the federal government are funding experiments in digitization and organization of knowledge. Much depends on the evolution of the faculty reward system, the extension of networked systems for peer-reviewing and publication, and the resolution of copyright issues. Discussions of altering promotion and tenure standards to include networked teaching, research, and publication are underway. It is a short step in the sciences from the fax-based reviewing system and the digitally based system that now generates printed journals to a fully networked system of review and publication. As Atkinson (1993) has pointed out, in the fully networked system for the recording and dissemination of scholarly information, the distinction between periodical and monograph disappears—a manuscript can be published as soon as it has passed muster. And the context-setting character that distinguishes monographs from periodicals will be replaced by a graduated continuum ranging from the least contextual research update to the most contextual, multilevel, richly linked document web that supplies more background and detail the farther the reader penetrates (p. 208).

Computers have become so central to undergraduate education that access to them has become a major issue. Providing access to networked computers is a significant new service in undergraduate libraries in the 1990s. Undergraduates use computers to write and print papers; send and receive electronic mail; and search indexes and catalogs, Web and gopher sites, and databases of their grades, class schedules, and work-study
openings. The library and the information technology unit in the university often share responsibility for making computer hardware and software available to students who cannot afford to buy them or who do not have a network connection. Extensive collaboration with computer professionals is crucial to giving all students the tools they need for their course work. Undergraduates are among the most computer-literate users in the university; librarians must be sure students have access to the virtual and the physical library and know how to use both effectively.

The presence of librarians and library services on the network must grow as the use of networked resources and services by undergraduates grows. Although it is too early to tell, it is possible that the importance of librarians on the network will rival the importance of the physical presence of librarians at reference desks and at public terminals. The situation is analogous to the coexistence of print and digital technologies in libraries. Librarians must have both technologies available to meet the educational needs of undergraduates. So, too, librarians will learn to balance the use of the physical and virtual environments to teach and deliver services. If real-time networked video and multiuser dimension systems become widespread and easy to use, librarians will be able to provide reference and instruction interactively and remotely when that is appropriate. By actively incorporating the virtual environment into the philosophy and geography of reference and instruction, librarians can expand the reach of their services and expertise.

CONCLUSION

The separation of undergraduate services and collections begun by the establishment of Lamont Library added impetus to the movement away from a single central library in large universities. The recent rise of networked hypermedia systems for the development, control, and dissemination of scholarly information and ideas has reversed that movement by linking collections and services that had been fragmented in physically separate buildings in university libraries. Services and collections are being recentralized in one location—the virtual library. Paradoxically, this new "location" and its constituents—the databases and the computers to view and use them—are more radically decentralized physically than any collection of buildings could possibly be because they are available at any network connection.

Separate undergraduate libraries continue to exist in some large universities. In others, services to undergraduates are not identified with a separate building. Undergraduates should be well-served in any library they use in the university and feel a sense of ownership of the whole library system. The reality is that the university, the faculty, the library system, and undergraduates themselves are split into many small, nearly autonomous, decentralized groups. The closest thing to a universal undergradu-
ate entity is usually the student newspaper and a library building they can
call their own. Undergraduates need advocates in a large university li-
brary system, and they need services designed to accommodate their num-
bers and the way they use libraries and library resources. What works
best in a given institution depends on many factors: institutional size and
history, social patterns, library leadership, and user expectations, among
others. The debate about the value of, and need for, separate under-
graduate libraries will continue because there is no universal answer. The
important point is this: undergraduates must be served and served well.
Although the construction of the virtual library will change how librar-
ians teach and how librarians organize access to resources, it will not
change the basic tasks of managing recorded representations of human
knowledge and experience and teaching students how to access it.

Under pressure to cut costs and improve undergraduate education,
research universities and their library systems are testing a variety of strat-
egies for making information and ideas available to undergraduates.
These strategies often involve the merging, consolidating, and centraliz-
ing of administrative functions. Nearly all involve extensive technologi-
cal upgrading that increases the need for centralized capital while decen-
tralizing the production and delivery of information and ideas. Greater
reliance on networked document delivery and coordinated reductions in
duplicated print titles is reconcentrating print collections in subject col-
lections. Research universities are betting on the future of cyberspace
and the ability of librarians, teachers, and researchers to create, orga-
nize, and disseminate knowledge in new and more powerful ways to deal
with the overwhelming growth of the knowledge base. It is becoming as
important for librarians to be a presence on the network as at the refer-
ence desk and in the classroom. The challenge to librarians is to apply
the instructional and organizational expertise gained from working with
print-based information systems to the creation and maintenance of digi-
tal information systems that fully use the strengths of computer and com-
munications technology and its worldwide infrastructure.

The spirit that animated the building of Lamont Library and the
undergraduate library movement must be brought to bear on the chal-
lenges of the 1990s and beyond. Librarians must initiate research and a
vigorous public debate on the effect that the reorganization of services
and collections, the reallocation of financial resources, and rapid tech-
nological changes are having on the role of libraries in undergraduate
education in the university. User studies are needed to document the
effect of institutional changes on undergraduates and on the quality of
the libraries that serve them. Increased awareness of how individual li-
braries are restructuring services and collections is necessary to maxi-
mize the effectiveness and minimize the damage inflicted by restructur-
ing driven by financial pressures. No university library can afford to ig-
nore the effects of the current changes on its undergraduate users.
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The Habit of Seeking: Liberal Education and the Library at Berea College

STEVE GOWLER

ABSTRACT
In 1993, Berea College inaugurated a new general studies program that includes seven courses with faculty-approved goals relating to communication and research. The program's course-integrated library instruction is designed collaboratively by instructors and their library liaisons. Library assignments are intended to introduce the logic of the library and its tools gradually and cumulatively so that students' understanding, use, and evaluation of the library's resources become increasingly sophisticated as they proceed through their general studies classes. The article begins with an overview of Berea College and its commitment to liberal education then argues that there is a natural connection between a liberal education and a curriculum that emphasizes regular use of the library's resources. A description of the library's role in Berea's new general education program follows.

BEREA COLLEGE AND THE LIBERAL ARTS

general education is not a smorgasbord curriculum from which a student may select at random samples of tidbits. Its purpose is to stretch and stimulate the student's mind, not stuff or entertain it. All of the courses are aimed to aid a student in developing a coherent and enlightened pattern of values, a personal ethic, and some good standards of taste and discrimination, so that he can find his way with a degree of sureness through a world of shoddy, shallow, conflicting, unworthy and unjust claims upon his attention, his participation and his loyalties. (Hutchins, 1963, p. 15)
This passage comes from a speech delivered to the Newcomen Society in 1963 by Francis Hutchins—Berea College’s sixth president; son of Berea’s fifth president, William J. Hutchins; and brother of the University of Chicago’s Robert Maynard Hutchins. It expresses Berea College’s commitment to liberal education, a commitment inextricably intertwined with its aim of carrying on “many forms of education at once—teaching the people how to get a living, and how to live” (Frost, 1937, p. 75), as an earlier president of the college, William Goodell Frost, put it in his 1893 inaugural address.

Unlike many colleges that are the product of nineteenth-century social activism, Berea cultivates communal memory of its past and attempts to develop in a way that is consistent with its roots. Founded in 1855 by Reverend John G. Fee on land donated by Kentucky abolitionist Cassius Clay, Berea was dedicated to offering interracial education to students of limited means. Those students came primarily from the mountains of Kentucky and neighboring states, and shortly after the Civil War, the school explicitly identified this area as its primary field of service. Berea has tried to remain true to the leading ideas and principles of its founders. By design, 80 percent of Berea’s students come from Kentucky and Southern Appalachia. Only students with low to modest family incomes are admitted. No tuition is charged, and every student is required to work at least ten hours per week in the college labor program.

Berea has always included vocational training among its courses of study. Today its majors include agriculture, education, technology and industrial arts, and nursing, as well as the standard liberal arts programs in the humanities, sciences, and social sciences. However, the option of majoring in a “practical” field does not allow a student to avoid a liberal education. From the beginning, Berea has had “a spade and a spelling-book in one hand, and a telescope and a Greek Testament in the other” (Frost, 1937, p. 76), and since the 1940s, all students have been required to take a course of general studies, a requirement based upon the belief that a liberal education is of fundamental value whatever one’s occupation.

The library program described below is largely a function of the particular character of Berea College. It was shaped by the convergence of insights gleaned from the literature and practice of librarianship, sensitivity to the needs of Berea’s students, and reflection on the nature of a liberal education. The idea that libraries are warehouses of books and magazines or clearinghouses for new information technologies misrepresents their symbiotic relationship to the communities they serve. The materials and services a library provides are sure to be inadequate and inappropriate unless they are developed in response to the mission and needs of the larger body. Of course, those needs, and perhaps the mission as well, may be manifold, resulting in a delicate balancing act on the parts of librarians so that time, energy, and resources are not squandered, thereby endangering the general well-being of the community.
Librarians should, of course, be lively participants in charting the course of their institutions, and they may initiate discussion on a wide range of educational and technological issues. However, they must guard against embracing and promoting the latest and greatest out of an unreflective fascination with novelty. Librarians abdicate one of their basic responsibilities if they are not sensitive to the defining characteristics and distinctive purposes of the communities they serve. To fail in this regard is to become alienated, ineffective, and marginalized.

The Natural Connection Between Liberal Education and the Library

There is no way of arriving at any sciential End but by finding it at every step. The End is in the Means: or the Adequacy of each Mean is already its End. Southey once said to me: You are nosing every nettle along the Hedge, while the Greyhound (meaning himself, I presume) wants only to get sight of the Hare, and Flash—straight as a line! he has it in his mouth!—Even so, I replied, might a Cannibal say to an Anatomist, whom he had watched dissecting a body. But the fact is—I do not care two pence for the Hare, but I value most highly the excellencies of scent, patience, discrimination, free activity; and find a Hare in every Nettle I make myself acquainted with. (Coleridge, 1979, p. 143)

In this typical Coleridgean passage—replete with his exuberant punctuation and genius for metaphor—we find memorably expressed an understanding of human beings that, if accepted, should have profound consequences for education. Coleridge’s emphasis on the powers, or “excellencies,” that are quickened and developed by engaging in certain activities is echoed in much of the finest thinking about the value of a liberal arts education (see, for example, Oakeshott, 1989). The current interest in “lifelong learning,” “independent learners,” and “resource-based learning,” is compelling to the extent that it corresponds to the depth and complexity of human abilities and longings.

What, then, distinguishes a liberal education as worthwhile and distinct from learning a specific discipline or from training in particular skills? This question is of perennial significance to liberal arts colleges like Berea, for if they cannot provide a cogent answer, their very raison d’être is threatened. Career-oriented training in skills and procedures is of fundamental importance to individuals and society. However, if it is the exclusive, or even the chief, goal of education, then many liberal arts colleges offer an overpriced, and often inferior, version of what could be obtained down the road at the state university, community college, or technical school.

This is not to say that only graduates of liberal arts colleges experience the adventure of learning and the personal empowerment promised by a liberal education. It is possible, and all too common, for students
at liberal arts colleges to remain blind to the benefits of the education they receive, to resent it as irrelevant to the practical concerns of making a living. On the other hand, one of the most striking—and liberating—things about a liberal education is that, once its nature is recognized and appreciated, one is disabused of the idea that it is a secret hoarded by professors at expensive schools and doled out only to the privileged few fortunate enough to sit at their feet. Although one does not have to attend a liberal arts college to become liberally educated, such institutions provide an important service to society by guarding the distinction between occupational training and the education of the entire person.

A liberal education is designed to create active, engaged, wide-awake learners. Its opposite is what Freire (1970) calls the “banking concept” of education in his devastating critique of educational systems that view students as vessels to be filled. This point of agreement between Freire’s education for socioeconomic liberation and a liberal education is instructive in light of the charge of elitism that is sometimes leveled at the liberal arts. There is a sense in which a liberal education is conservative or, more accurately, conserving (Postman, 1979). Genuine self-understanding is impossible unless an individual is conversant with the language, traditions, ideas, and institutions that have shaped his or her own values and beliefs. Though it requires respect for the shaping power of the past, it also encourages students to develop the habit of self-examination. Unquestioning acceptance of what we have inherited is akin to indoctrination, which is among the most dangerous enemies of liberal education. The active learner analyzes, assays, and exercises critical judgment before assimilating values and beliefs of past generations.

A liberal education is also sometimes accused of being ethnocentric. Again, there is a conserving element present, a recognition of the massive impact of European thought on our society. But the liberal arts claim to enhance our ability imaginatively to stand outside ourselves and to foster open-mindedness and tolerance. By promoting such abilities, they serve as a corrective to what William James (1967) called a “certain blindness in human beings”—namely, our inability to see and feel things from another’s perspective.

Thus, even the study of one’s heritage as a key aspect of self-knowledge requires an active imagination and a knack for asking tough questions. The past is valuable insofar as it continues to impinge upon the present and future, either through direct influence or by offering enriching alternatives to contemporary ways of thinking and acting. Expansion of present possibilities is the chief, though often unacknowledged, touchstone of the liberal arts. Thus, a liberal education is not a deposit of dry data or a narrow ideology that an older generation tries to force feed a younger one. It is an education that, properly understood, strengthens one’s present being through vigorous wrestling with what has come before. As Alfred North Whitehead (1949) observed:
the understanding which we want is an understanding of an insis-
tent present. The only use of a knowledge of the past is to equip us
for the present. No more deadly harm can be done to young minds
than by depreciation of the present. The present contains all that
there is. It is holy ground; for it is the past, and it is the future. (p.
14)

The fact that the liberal arts are chiefly concerned with active learn-
ing, responsible freedom, and discerning fruitful connections does not
mean that content is unimportant. The habits and dispositions that are
at the heart of this education cannot be imparted directly. The intellec-
tual counterpart of hands-on education is deep engagement with signifi-
cant challenging content. The prevalence of the *Iliad, King Lear, Pride
and Prejudice,* and *Invisible Man* on college reading lists is not due to the
machinations of a cabal of literary critics and self-appointed canon-mak-
ers. Rather, it is because such works simultaneously offer students the
cultural literacy Hirsch (1987) calls for, and more importantly, because
they demand that students exercise judgment, analyze with care, and dili-
gently seek connections to mine their latent riches. Colleges and univer-
sities should be the testing ground of the "great works," the classroom a
crucible in which the prime expressions of our forebears are subjected to
the refining fire of the present to see what persists as worthy of our effort
and attention.

The point of such education is not that students be able to recognize
literary allusions that occasionally appear in newspapers or in a snippet
of a politician's speech that finds its way onto television. Instead, a liberal
education is based upon the conviction that grappling with texts, paint-
ings, scores, ideas, arguments, and concepts enlarges one's imagination,
judgment, and aesthetic sensibility. It is a means by which the full range
of one's being—intellectual, moral, spiritual, and emotional—is devel-
oped. The purpose and telos of such an education was described by Wil-
liam Cory, a classical master at Eton:

> you are not engaged so much in acquiring knowledge as in making
> mental efforts under criticism . . . you go to a great school not so
> much for knowledge as for arts and habits; for the habit of attention,
> for the art of expression, for the art of assuming at a moment's no-
> tice, a new intellectual position, for the art of entering quickly into
> another person's thoughts, for the habit of submitting to censure
> and refutation, for the art of indicating assent or dissent in gradu-
> ated terms, for the habit of regarding minute points of accuracy, for
> the art of working out what is possible in a given time, for taste,
> discrimination, for mental courage and mental soberness. And above
> all you go to a great school for self-knowledge. (Cited in Oakeshott,
> 1991, p. 491n)

If Cory is correct, if education is chiefly about the development of
arts, habits, and dispositions that will equip students to make wiser
decisions and thereby live fuller lives, then it follows that the library plays
a central role in a liberal education. For the library is the place *par excellence* where the implications of ideas can be traced, where contextual connections can be filled out, where propositions can be tested, and where a community of learners may be established through interaction with their preserved heritage and collaboration on fresh projects. Among the many implications of the view of education here adumbrated is that it cannot be cut to fit three fifty-minute sessions per week without gross distortion. Those regular plenary gatherings will, for most classes, remain important moments for discussion and instruction but, if education is to fulfill its promise, it must transcend the spatial and temporal constraints inherent in the model of a classroom headed by a subject expert lecturing to pencil-poised students. The more successfully schools encourage students to develop the habit of seeking—i.e., the commitment to questioning, analyzing, synthesizing, and making well-informed decisions—the more indispensable the library becomes. It can, and should, be the site where what Robert Maynard Hutchins (1952) calls the "great conversation" is joined by those who wish to embark on the adventure of learning.

**THE LIBRARY IN BEREA COLLEGE’S NEW GENERAL STUDIES PROGRAM**

Berea College inaugurated a new general studies curriculum during the 1993-94 academic year. This curriculum, which is taught by faculty across the disciplines, runs through a student’s course of study and thus cannot be "gotten out of the way" during the first two years. General studies have been a central part of a Berea education for more than fifty years, and at least since the last major revision of the curriculum in 1972, the library’s key role in general education has been recognized. The new program represents an awareness that the habit of seeking must be developed over time and is not a simple content or procedure that can be handed to students during their first year and then neglected. The guiding principle here is well-expressed by Grudin (1982): "Philosophically speaking, 'to learn' is a verb with no legitimate past tense" (p. 110).

The college’s rationale for requiring each student to engage in general education beyond the specialized education of the departments is expressed in the following statement of aims and purpose:

Central to Berea’s aims for liberal education is the liberation of the individual in a life-long pursuit of truth. This pursuit is undertaken for pleasure as well as for practical reasons. Berea’s General Education Curriculum seeks to join the student in gratitude to the past and in obligation to the future. The General Education Curriculum, which is shaped by the Great Commitments of Berea College, includes the aims of:

- developing knowledge of and gaining appreciation for the liberal arts: their histories, limitations, and inter-relationships.
mastering skills of abstract and logical thinking, critical analysis, literacy (reading, writing, speaking, listening, information-seeking) and numeracy.

• enhancing imagination, sense of personal authority, ethical, religious and historical consciousness, and habits of inquiry, service, and creativity.

• developing appreciation of and respect for the experiences of others, especially in terms of race, gender, religion, language, class, cultures, and societies.

• shaping a community which encourages discussion, reflection, creativity, and action; and which embodies and values freedom, justice, purposeful activity, personal responsibility and constructive leisure. (Berea College, 1993)

Berea has a significant history of course-related instruction (see Hughes & Flandreau, 1980; Rader, 1984; Taylor, 1991). The new program attempts to extend that tradition into a coherent curriculum-integrated program. The commitment to incorporating the library into courses in a way that complements and enriches what the class is designed to achieve continues unabated. The new scheme aims to ensure that all students have a variety of research experiences across the curriculum so that they will come to realize that going beyond the processed information of textbooks, and thus becoming responsible for their own education, lies at the very heart of education and is not a one-time exercise.

The program is conducted by four librarians who devote from one-fourth to one-half of their time to instruction. Liaison assignments are made each year for each course. The same librarians also have departmental liaison responsibilities, but these do not determine which faculty members the librarians will work with in the general studies courses. By working with different librarians, faculty are more likely to develop confidence in the program and not merely the person.

The following core courses, which are distributed over the student's four years, are designated as courses in which communications and research abilities will be developed:

Stories: Encountering Others Through Literature (first year, first semester)
U. S. Traditions: Texts of Justice and Freedom (first year, second semester)
Western Traditions I and II (second year, first and second semesters)
Arts in Context (second, third, or fourth year)
World Issues Since 1945 (third or fourth year)
Christianity and Contemporary Culture (fourth year)

These courses constitute a common framework of studies for all Berea students, while simultaneously allowing enough flexibility for individual instructors to make the course their own. For example, in the first two
years of the *Stories* class, Maya Angelou's (1969) *I Know Why the Caged Bird Sings* was on the reading list for all sections. The balance of the required reading for each section was determined by the individual instructors, who are responsible for giving the course thematic coherence within the general guidelines laid out by the course planning committee. Each of the core courses follows a similar pattern: one or more common readings for all sections and substantial freedom for the instructors to find their own ways of meeting the course goals.

Among the goals delineated by the planning committee for each course are those relating to communication and research. Students are required to maintain a portfolio of writing samples from these courses. For each portfolio piece, they are asked to include a copy of the assignment and a page or two of reflection upon their writing and research processes. The portfolios allow students to chart the development of their various literacies: reading, writing, listening, and library research. They also offer a means of evaluating the program itself, since they are available to Berea's Center for Effective Communication and to the library to assess whether the courses are meeting the communication and library goals. Below are the research goals as articulated for each course.

*Stories*

*Stories*, the first course in the general studies program has, as its chief communication goal, the development of critical reading and listening skills. While there is a substantial amount of writing in the class, it often takes the form of journal entries or brief reading responses rather than formal essays. The library goals for the course are basic and introductory: to become acquainted with the library building and with the location of resources and services; to learn to do basic searches on BANC, Berea's online public catalog; to become acquainted with library human resources by working with their library liaison; to use specialized reference works that will help students read resonantly and with deeper understanding. The orientation to the building, services, and OPAC is achieved by means of a forty-five-minute audio tape tour. The other goals are generally met through one or more sessions with the library liaison. By being introduced to an array of general and specific dictionaries and thesauri, students can become more alert to the power and subtlety of words and to the consequences of the choices writers make when they create a character, depict an event, or express an emotion. Topical encyclopedias, thematic atlases, and biographical sources help students fill out the contexts of their readings, thereby "broadening the framework" of their understanding and response (Rosenblatt, 1983).

In *U. S. Traditions*, readings, discussion, and expository writings focus on issues of unity and diversity in such key American texts as the *Declaration of Independence*, *Federalist 10*, *Civil Disobedience*, the *Gettysburg Address*,
the Seneca Falls Declaration, and Brown vs. Board of Education. The writing assignments in this course require students to analyze texts and issues, but they are not expected to do extensive research. This is the place in the program, however, where students are introduced to the nature, use, and evaluation of periodical literature and indexes. Annotated bibliographies are a popular assignment in this course, though some instructors devise assignments that lead to oral presentations or to detailed critical evaluations of only one or two articles. Assignments vary greatly from section to section, offering various paths to the common goal of ensuring that students understand the role of periodical literature in scholarship and research, how to choose indexes that are most likely to lead them to pertinent articles, and how to evaluate the located articles as to audience, authority, and cogency.

Western Traditions

Western Traditions is a full-year course that emphasizes engagement with primary texts. All sections use a standard textbook to give students a historical backdrop for the discussion of foundational works of the Western heritage. Students write what the course planners call "documented, scholarly essays." In the first semester, these essays do not necessarily require students to work through the entire research process—i.e., from topic selection to final draft. Instead, instructors often ask for essays that respond to a specific question or directive (How is Agamemnon's taking of Briseis similar to David's taking of Bathsheba? Discuss Dante's use of Virgil's depiction of the Underworld in the Aeneid) requiring students to incorporate perspectives drawn from critical secondary literature into their papers. In the second semester, a full research paper is assigned, with the instructor, sometimes with the aid of the section's library liaison, monitoring students' progress in topic selection, thesis formation, information gathering, marshaling of evidence, rhetorical competence, and attention to academic conventions of documentation and style. The essays of Western Traditions, like the assignments in the first-year courses, are not isolated exercises in following a general formula for research but are ways of enhancing and deepening understanding of the subject.

Arts in Context, World Issues Since 1945, Christianity and Contemporary Culture

Arts in Context, World Issues Since 1945, and Christianity and Contemporary Culture give students opportunities to hone the skills and reinforce the habits introduced during the first four courses of the general studies sequence. Each course requires students to do independent work that makes them increasingly responsible for their own learning. A research paper per se is not mandated in these courses; research may result in creating a play, leading a seminar session, designing a museum exhibit, or organizing a mock debate between leaders of industrialized and
developing nations. Again, assignments emerge from the convergence of common goals and the particular decisions of individual section instructors.

The general studies curriculum sketched above arose out of sustained collective reflection on the values and purposes of the liberal arts. The library instruction aspect of the curriculum intends to respect the growing power of students by being "progressive," which simply means that the logic and promise of the library and its resources are introduced gradually and cumulatively. Students are asked to become increasingly sophisticated researchers as they move through the general studies courses. The library goals are ordered to yield a cumulative effect as students build on previous experiences. They issue from the conviction that sound method arises through reiteration:

Every teacher, whether he knows it or not, teaches three things at once: the subject under investigation, the art of investigation and the art of teaching. The two latter teachings, which concern method rather than matter, are more sublime, more lasting and more important. We teach them by patient and unadvertised repetition, showing through time how the same method works in a variety of cases. Only through this combination of coherence and variety can the student grasp the nature of method—abstract it and see it as something distinct from the specific subject matter and the specific character of the teacher. (Grudin, 1982, p. 110)

Library instruction in this scheme is also intent on being organically related to what happens in the classroom. Aside from the initial tape tour of the library, there are no canned presentations in this program. Librarians and instructors must collaborate to create projects and assignments that students recognize as relevant to specific goals of the course. When library skills are tied to activities designed to yield a fuller, more penetrating, comprehension of topics integral to the course, students are more likely to see their research as relevant and potentially useful in other situations. This requires close working relations between librarians and teaching faculty, a partnership based on recognition of the complex nature of learning and on the advantages of pooling expertise (see Baker, 1989).

Cooperation between teaching faculty and librarians is fostered by the programmatic nature of the relationship. There is an institutional expectation that library research be incorporated throughout the general studies program. The institutional aspect is evident in the librarians' role in the course planning process, in the validation of those course plans by vote of the entire faculty, and through librarians' participation in the workshops conducted for general studies instructors. Several positive consequences flow from this communal commitment to the library and to the type of learning it enhances. The shape and success of the library instruction program are not the responsibility of one or two librarians but of the entire campus. This significantly reduces the time
and energy librarians must invest in “marketing” the resources and services they offer. It also lessens, though does not eliminate, the problem of what Thompson (1992) has called “recalcitrant faculty.”

The distribution of library experiences across the curriculum means that librarians need not try to tell students everything they need to know about the library in each class session. In fact, it sharply reduces the number of sessions devoted predominately to librarians lecturing. Because the librarians know students will be returning and will be asked to utilize library resources in a wide range of situations, library instruction sessions can afford to be very precise and, often, quite brief. A typical instructional session in the new program might include a sharply focused presentation of ten to twenty minutes, distribution of a bibliography tailored to the specific assignment of that particular section, then a working session in which students can get started, with the librarian and instructor available for consultation when questions arise. This assumes that the habit of seeking is best developed through asking students repeatedly to extend their inquiry beyond the classroom in ways that expand comprehension of their courses’ subjects.

**Open Questions**

Does the library program described above work? Does it in fact help students become better equipped to make wise choices, encourage them to become responsible for their own education, effectively instill in them a habit of seeking? The easy answer is that it is too early to say since the program has not been tried in its entirety. The first students under the new curriculum will not graduate until 1997. A more searching answer must also be indirect. One of the most crucial challenges not only for the instruction librarians, but also for the college as a whole, is determining what we need to know to answer this vital question.

The general studies program includes faculty workshops for mutual support and communication in the areas of course design and development. These workshops, along with the course planning process and the general studies portfolio, signal the importance of working together to make well-informed decisions about the general studies program. Such structures of reflective exchange allow for mid-course corrections of the program and for regular conversation with one’s colleagues about how best to achieve the promise of a liberal education. Such regular communal reflection and analysis is indispensable to an educational program that truly values what it professes—namely, a commitment to deepening self-knowledge and to the pursuit of truth. The initial responses of the faculty to the new program have been very positive. Most faculty have shown themselves willing, sometimes eager, to work collaboratively with librarians to make their assignments more responsive to students’ needs,
interests, and abilities. The librarians’ efforts to make instruction directly relevant to the courses’ central aims are appreciated by the faculty as well as by the students, according to the anecdotal feedback garnered so far.

But as valuable as such opportunities for communication and reflection are, and as gratifying as faculty approbation is, they do not constitute an adequate way of determining whether the program is actually doing what it intends to do. Devising a means of evaluating the program will be done in concert with Berea’s campuswide plan for effectiveness and self-examination. Evaluation of Berea’s former instruction program was conducted using pre- and post-tests, faculty attitudinal surveys, focus group interviews, and analyses of senior students’ research paper bibliographies (see Henthorn & Royse, 1993). Such standard instruments of evaluation will almost certainly be utilized again as the new program unfolds. However, the construction of a flexible multifaceted evaluation process that does not succumb to distorting quantification remains a task to be achieved.

What impact will the Internet and other electronic resources have on the role of the library in the general studies curriculum? At this point there is very little use of the Internet or other online searching options in conjunction with the general studies courses. Given the basic philosophy of the liberal arts and the way the library can enhance that type of education, this is not a major concern. The commitment to course-integrated instruction means that there is no intention of using the general studies curriculum as a place to “teach the Internet” unless such training is essentially tied to a class project. For students interested in expanding their awareness of, and sharpening their ability to use, the Internet, there are campus workshops that offer such training.

The general studies program, if true to its commitment to the type of reflection characteristic of a liberal education, should be a place where students train a critical eye on their entire tradition, including society’s often unthinking embrace of technology. If students complete the general studies curriculum without recognizing that “technology giveth and technology taketh away” (Postman, 1992, p. 5), then something has gone awry. The beneficiaries of a liberal arts education should heed Suber’s (1992) warning about the grave danger of confusing access to the bedazzling wealth of information made available by computers with education. Perhaps such sober questioning and critical evaluation will become second nature to those who have cultivated the habit of seeking.

REFERENCES


Undergraduate in Focus: Can Student Input Lead to New Directions in Planning Undergraduate Library Services?

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ABSTRACT
Focus groups are an effective way of soliciting student and faculty impressions of library directions, services, and collections. They can be used as part of library strategic planning or to reevaluate services in the face of budget cuts and downsizing. In this article, the authors provide a brief overview of focus groups; discuss the use of undergraduate focus groups on two campuses of the University of California library system; describe the methodologies used to conduct them and the conclusions drawn from the results of the interviews; outline actions taken as an outcome of the focus group discussions; and describe new directions the libraries were led to as a result of student input.

INTRODUCTION
Strategic planning in universities often involves many complex activities: consultant-led brainstorming sessions, retreats, meetings with staff participation at all levels, the use of bubble-up techniques, and even staff focus groups. Often faculty are included in at least some portion of the planning. What is less common, even rare, is the effort to gain information from students—the actual customers or stakeholders in what the university has to offer.

What are the reasons for this lack of input by the very consumers of the educational product we provide? There may be a risk in finding out this information—is this why libraries so rarely ask? The most skeptical
may think that users only want a quiet place to study which is open twenty-four hours a day, with reserve readings readily available, plentiful photocopiers that always work, and no-cost printers attached to the online catalogs. The more optimistic may think we need to provide even more classes on using information resources or more accurate and timely serials holding data.

Some may argue that this information is unnecessary because we as educators, professors, and librarians know what the customer needs. Library staff struggle to keep reference desks open for students. For their sake we write bibliographic guides and pathfinders and offer wonderful courses in using electronic information sources which we know they will need to pursue their academic programs, but we rarely know from students—our primary users—what they think of us or the services we provide for them.

Quite coincidentally, at two campuses of the University of California (Berkeley and Los Angeles), the libraries undertook focus group interviews of undergraduates (Berkeley also surveyed graduate students and faculty) in Spring 1993 as part of a strategic planning process, to determine students’ perception of the library and to understand better what undergraduates wanted the library to provide. For better or worse, both campus libraries very much wanted input from our often-overlooked consumers in planning for the 1990s and for the twenty-first century.

HISTORY OF FOCUS GROUPS

What exactly is a focus group?

A focus group can be defined as a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, nonthreatening environment. It is conducted with approximately seven to ten people by a skilled interviewer. The discussion is relaxed, comfortable, and often enjoyable for participants as they share their ideas and perceptions. Group members influence others by responding to ideas and comments in the discussion. (Krueger, 1988, p. 18)

Focus groups were originally used in the 1940s in the field of sociology (Hendershott & Wright, 1993, p. 154). They were soon picked up as a marketing tool in other fields and in the 1990s began being widely used as a tool of qualitative measurement in libraries (Baker, 1991; Widdows et al., 1991; Young, 1993).

Why use a focus group for this kind of information seeking? According to Krueger (1988, pp. 44-46), there are several positive reasons. First, focus groups bring people together in a social setting where their ideas can be shared by others. The setting is conducive to free and open discussion. Second, the moderator of such a group can pursue ideas that
arise in the course of discussion—follow-up that could not possibly occur through the use of printed surveys. Third, the results of focus groups are framed in lay terminology making them easily understood by others. Fourth, for public institutions particularly, their low cost is appealing. The fifth advantage is that the results can be obtained quickly—an important feature for both UCLA and Berkeley library staff. Finally, through the use of focus groups, researchers can obtain a rather large sampling of qualitative data. All of these features make focus groups an attractive instrument to learn about the perceptions of undergraduate library users.

Focus Groups at the Two Institutions

Beginning in July of 1992, the library initiated an extensive strategic planning process in order to look ahead for a period of three to five years and envision what the library should be like at the end of that time. Working groups were established in the areas of automation, bibliographic access, collections, research services, library culture, and development and external relations as part of the process. A working group on undergraduate services was originally envisioned by the new university librarian. The group's charge was to include a redefinition of basic services to undergraduates, a discussion of the relationship of undergraduate services to academic programs, of the traditional role of Berkeley's Moffitt Undergraduate Library as the core of the library's undergraduate services, and of the role of networked services in undergraduate library programs. The working group on undergraduate services was also to have been charged with soliciting input from undergraduates and from faculty and campus administrators whose special concerns included undergraduate education. Not all of the working groups were ultimately constituted by the university librarian as originally envisioned, and the undergraduate services working group was one such task force.

Over time, and as the strategic planning process unfolded, the university librarian determined that instead of limiting the solicitation of planning input from key campus groups to the issue of undergraduate services, this function should instead be broadened to encompass a variety of library-wide services, roles, and directions. She envisioned the vehicle for soliciting the needed library planning input from campus end-users to be a series of focus groups organized by the library and run by the campus Survey Research Center. A library focus group project coordinator was appointed.

During approximately the same time frame, on the Los Angeles campus of the University of California (UCLA), a strategic planning process dubbed "Transforming UCLA" was taking place. The library was one of many units planning for the future. In this strategic planning process within the library, it was only the undergraduate or College Library staff that decided to survey its stakeholders.
The UCLA library staff set the goal of involving a broad range of students—all class years, all majors, all ages, and on-campus and commuter students. The staff wanted to include library users and nonusers; no library employees were permitted in the focus groups. To attract subjects, staff used a mass market approach. With funding from the Office of Instructional Development, the library purchased two quarter page advertisements in the campus paper, the Daily Bruin, announcing the focus groups; large posters advertising the focus groups were designed and posted in the eight campus residence halls as well as the undergraduate library and the University Research Library; and small posters were printed and posted in fraternity and sorority houses, in residence halls, on the student union campus bulletin boards, and in campus libraries.

Realizing that students might be somewhat reluctant to give up two hours of their limited free time, the library offered an incentive. Negotiation with the Associated Students of UCLA resulted in their generous provision of $10 Bruin Gold Cards (which can be used to acquire meals, clothes, or school and computer supplies) to each focus group participant. These cards were mentioned in the Bruin advertisement and on the various posters.

After a week of advertising, the library recruited enough students for five focus groups. The demographics of the groups were representative of the total campus population. Two students were first-year, seven were second-year, six were third-year, eight were fourth-year, and three were fifth-year. The students' majors broke down along the following lines: twelve humanities, nine social sciences, three sciences, and two undeclared. Seven students lived on campus and the rest lived either within walking or commuting distance. Thirteen students ranged in age from eighteen to twenty, eight between twenty-one and twenty-three, and five were over twenty-four years old.

College Library staff met with two professionals from the campus Center for Human Resources prior to conducting the groups to develop a list of questions and to answer questions they had about library jargon and preexisting conditions in the library. Each group began with an introduction by the college librarian or designee stating the purpose, introducing the facilitator, thanking the students in advance for their time, and stressing the importance of this endeavor. The librarian then left the room so students could speak freely, expressing both positive and negative opinions without worry about offending the sponsor (Appendix A includes the UCLA Focus Group questions).

At Berkeley, a technical advisor at the campus Survey Research Center advised the library on how best to arrange for thirty to thirty-six of some 20,000 undergraduates to be recruited to participate in the focus groups. It was finally determined that the library would use its own patron database for selecting the students, and a random selection of names
was made. With the assistance of the Library Systems Office, the focus group project coordinator was able to order a list comprising every eighth name from each letter of the alphabet from the GLADIS (the Berkeley online catalog and circulation system) student patron database.

A small team of volunteers from the librarian's office support staff and public services staff was formed to make telephone contact calls. Two of the four staff assigned to calling were themselves undergraduate student library employees. Approximately ten to eleven hours of telephoning were required to subscribe the thirty-five undergraduate participants. Of the hundreds of undergraduates reached by phone, only one declined to participate because of lack of interest in the project. Virtually all of the undergraduates contacted expressed a high degree of enthusiasm for the project and were willing to participate. This came as a surprise to library staff since the focus groups were scheduled to take place less than two weeks before the start of final examinations.

Among the many undergraduates contacted but unable to participate, the most frequently cited reasons for nonparticipation were: (1) focus group discussion sessions conflicted with the student's class schedule, or (2) focus group sessions conflicted with the student's work schedule. One interesting phenomenon was the fact that the library's undergraduate student employees who telephoned potential participants were consistently more successful in persuading students—their peers—to participate than were the older career library employees who also made calls.

As incentives for the Berkeley students, the library offered refreshments, complimentary library copy cards in the amount of $10 which could be used to make copies on any of the library's photocopying machines, and library-produced notecards and mugs customarily provided to library donors.

Although the lists used to contact undergraduates were randomly generated, they turned out to include a broad range of undergraduates, ethnically diverse in composition, which in fact mirrors the Berkeley undergraduate population. The groups included five freshmen, ten sophomores, twelve juniors, and eight seniors. Four were humanities majors, six were social science majors, six were science or engineering majors, three were unspecified double-majors, and sixteen were undeclared majors.

At Berkeley, the Library's Focus Group project coordinator met with the design consultant from the Survey Research Center and five public service librarians, including the Acting Head of the Undergraduate Library, to identify topics worthy of exploration. The results of the group's discussion formed the basis of the Undergraduate Discussion Guide and Undergraduate Focus Group written survey prepared by the Survey Research Center's design consultant. The written survey was administered at the conclusion of each undergraduate focus group discussion.
The sessions themselves were scheduled in the stately conference room of Berkeley's Bancroft Library and centrally located on campus. Each group began with self-introductions by the participants and the Survey Research Center's design consultant. Participants were reassured at the outset that the library wanted their frankest opinions and reactions, and that they should feel encouraged to speak freely. They were reminded of the purpose of the focus groups—to solicit student and faculty input to be used in library strategic planning and decision making—and of the length of the sessions.

Basic ground rules governing discussion were explained (e.g., participants were asked not to interrupt one another while speaking and reminded that the discussions were being taped). Participants were thanked in advance for their participation in this important and highly visible library project. The Library's Focus Group project coordinator attended all the sessions as an observer only and to serve as a resource in answering any questions on library services, policies, or collections which might be required in order for group discussion to continue productively. Her role was made clear to the participants at the outset, and her involvement in the discussions was minimal. The focus groups lasted two hours each, including time spent on introductions and on the completion of the written questionnaires which were distributed at the conclusion of the group discussions.

Outcomes: The UCLA Experience

The UCLA experience revealed that the two-hour sessions reinforced some of the library's self-perceptions and uncovered some new concerns. Six areas emerged as common ground in each group:

1. The library's need to advertise its services. Most students were unaware of the variety of services available in the library, such as a computing laboratory and telephone renewal. They suggested that the UCLA library develop a comprehensive guide to services (the library does, in fact, have such a guide. The fact that students were unaware of this is, in itself, revealing).

2. The students' desire to have an automated reserve service. Students complained that it took too much time to fill out cards for every reserve item they wanted to check out. They wanted reserve check-out to be automated as is the library's regular check-out. As reserve use had been increasing, so had user frustrations with the slow manual check-out process.

3. Student appreciation of "quality" assistance. The students felt that the librarians were friendly and helpful and available for their needs. Some wanted librarians available more hours. The library offers reference service sixty-two of the eighty-seven open hours per week. Generally, the staff as a whole received positive comments.
4. **Library education.** In general, students were not interested in workshops on how to use the library. They felt they had neither the time nor the interest and preferred to have access to a librarian when they needed an answer to a specific question. The library component of English 3, the required basic composition class, received mixed reviews. The idea of a comprehensive guide was mentioned here also as a useful alternative.

5. **ORION and MELVYL®.** Three themes were evident regarding ORION and MELVYL, the online catalogs: (a) students thought these systems had a lot more in them than they knew how to get; (b) they found them hard to use—"user hostile"—and were confused as to why each system had different commands; (c) they did not understand the differences between ORION and MELVYL and when to use one or the other.

6. **Checkout policies.** Almost all of the participants wanted longer loan periods—four weeks versus two—on core collection books.

**Outcomes: The Berkeley Experience**

In the Berkeley focus groups, some different questions were asked and different themes emerged. A topic that arose in the UCLA sessions—the need for automated reserves—had been already addressed by the UC Berkeley libraries and therefore was not an issue. Nine general areas were probed with undergraduates at Berkeley using the focus group discussion guide. These are included in Appendix B.

A written questionnaire distributed to participants following the group discussions asked participants to rank, on a scale of one to four, the importance of various currently offered library services. Services listed included everything from photocopying machines to library skills workshops, access to collections, to a variety of online and electronic databases, and to interlibrary and reference services. Further, students were queried as to which campus libraries they used most often, the currency of the materials they consulted most frequently, and whether or not they were employed by the university and if their job permitted them to utilize services not normally available to undergraduates. Finally, they were invited to make any additional comments they wished about the library.

At Berkeley, focus groups revealed the following:

1. **On library use, services, and facilities.** "That's like a day's travel, exploring all the libraries on campus." Many undergraduates reported using Moffitt (the undergraduate library) or Doe (the main research library) libraries almost exclusively, particularly during their first two years at Berkeley. Some were unaware that branch libraries existed until they were juniors and required to do research in their chosen
major. Some found the then Moffitt Undergraduate Library too noisy to study in, others were not affected by the noise. Many wanted enclosed study rooms within the libraries where they could meet in groups to discuss class assignments or study for exams. Several described Doe Library as “beautiful” and “civil” yet intimidating to use. 2. On library instruction. “I don’t think they really prepared you freshman year for the libraries.” “I actually had a class that showed us how to use the library, mainly computers. It was Biology 1B, in which you were forced to write a research paper. What they did was show us how to use the different [online] catalogs in the class. We were required to do research. So I found that very useful.” “Having classes where you’re forced to use the library is a good idea. That’s a great idea.”

Many undergraduates admitted to trial-and-error methods of learning to use the libraries. Many did not know that the libraries offer tours and instructional programs. Those who attended library lectures integrated into other courses and related to specific class assignments rated them highly; library presentations unrelated to a particular assignment were at times described as “overwhelming.” Some students felt they retained more when they learned by “stumbling around”; others requested reference handouts, library information packets, and regular rotating monthly tours of the various campus libraries to help them learn.

3. On staff helpfulness. “Every time I’ve asked a librarian for help . . . they get all excited . . . they want to show you what they know . . .” “I usually don’t go to the student aide-type people. I just go to the older looking librarians and they’re really nice. They seem like they have a lot of work to do.”

While several undergraduates characterized student library employees as being “apathetic,” in general their reaction to library staff was quite positive.

4. Trade-offs. (hours versus books). Undergraduates were unanimous in wanting longer library hours; some worried about campus security at night. When faced with a similar hypothetical choice, although year-round hours were crucial to their use needs, graduate students opted instead for collections over extending library open hours.

5. On print and electronic resources.

Moderator: “Have any of you dealt with online catalog help screens?”
Student 1: “I’ve begun to start doing that. I mean, I have a modem.”
Student 2: “Is that the online catalog help screen, the modem?”
Student 3: “Yeah, it’s that Internet deal, isn’t that what it is?”

“I love printed books and journals. I don’t think I could ever handle reading all my books off computers. I mean, I’d go crazy.”
In general, undergraduates revealed themselves to be inexperienced in online systems. Most of the participants in these groups did not own their own computers. When asked for preferences regarding print or electronic sources, undergraduates resoundingly responded in favor of print materials. This was one of the biggest surprises of the focus group results.


Undergraduates did not rely on the campus newspaper as a source of information; rather, they paid most attention to information that came to them in the U. S. mail. The undergraduates mentioned that because they receive so little U. S. mail, anything that does arrive addressed to them is read thoroughly and with enthusiasm. The beginning of Fall semester was described as a particularly good time to reach undergraduates, before the press of the academic semester was upon them. Early in Fall semester is a time when undergraduates frequently look for activities to fill their weekly schedules.

**UCLA’s Written Survey**

UCLA followed its focus groups with a more ambitious written user survey (see Appendix C). A questionnaire was prepared by college library staff in consultation with library administration and was designed by the library's Graphic Arts Service. During the Spring 1993 quarter, the survey was distributed and completed by 452 students in large lower division lecture classes. Four professors graciously allowed the survey to be administered in their biology, history, geography, and English lectures. Two adjunct lecturers distributed the surveys to sixty students in two upper division library science classes. An additional 607 surveys were handed out in the undergraduate library.

From the survey responses, library staff could profile their typical users and discover how they related to the college library. College library users are typically between 18 and 21 years old, walk to campus, work sixteen hours per week, and use the library once a week. Their main reason for using the library is to study their own material, followed closely by checking out class reserve material. On a good-satisfactory-poor scale, they find service to be good; collection size, lending policies, and study facilities to be satisfactory; and hours and staff to be good. Two-thirds felt they knew something about libraries before coming to UCLA (note: California ranks fiftieth of the fifty states on funding for school libraries, so the perception of what students actually do know may be optimistic).

When asked what was most useful to them when further assistance was needed, they favored asking library staff over other means such as tours or quarter-long courses. Slightly more than half felt that further
guidance in using libraries would be useful. When presented with a list of options for this guidance, such as tours, workshops, handouts, signs, and a self-help video, the undergraduates felt handouts would be most helpful followed closely by more signs. Workshops, a self-paced skills booklet, and tours were ranked lower as methods of learning more about using the library. When asked to provide guidance to library staff regarding areas that could be cut if needed due to shrinking budgets, the students felt that exhibits and travel guides could be stopped; they did not want to see reference service or reserves eliminated.

**Focus Group Impact on Berkeley’s Undergraduate Library Services**

The library at Berkeley was on the verge of a transformation in some areas as the focus groups were taking place. One of the changes was the creation of the Teaching Library, a new service with a rather innovative structure. The Teaching Library is the central instructional service of the UC Berkeley Library. It consists of a team of full-time and part-time Program Coordinators, a half-time User Research Coordinator, the Library Graphics Service (responsible for signage and library publications), and the campus Media Resources Center.

The rationale for placing the Library Graphics Service under the teaching library was to provide an integrated signage system for the library as a whole, supplying patrons with the support necessary to navigate independently and easily the library’s many (and some very complicated) buildings, and to locate the information, services, and materials that they need. For the Media Resources Center, the rationale for inclusion in the teaching library was the need to keep a close relationship with nonprint media, electronic resources, and the library’s teaching function.

The half-time User Research coordinator turned out to be a critical position in the teaching library. Creating this post allowed the library the luxury of pursuing, in a more systematic and focused manner, the questions that had begun to be raised by the focus groups, and to use the results of various surveys conducted by the User Research Coordinator to explore faculty thinking on library literacy and library instruction. One question raised by the focus groups was how best to instruct students in the use of library resources and, in particular, electronic resources, given the fact that students were in general neither comfortable nor adroit in using them.

In Spring 1994, the User Research Coordinator conducted a survey of graduating seniors in political science and sociology to determine their level of information literacy competency. Results showed that students rated themselves far more knowledgeable in library and research skills than they actually were. Many graduating seniors had serious difficulties
in distinguishing between a monographic and serial citation; in knowing how to search effectively for materials by subject; and in identifying the major research tools in their fields.

Armed with this knowledge, based on current empirical research, library staff contacted faculty to enlist their support in integrating bibliographic instruction into the curriculum. This is a critically important step: students at Berkeley had already revealed themselves in the library’s focus group discussions to be amenable to a library course.

From lessons learned in the undergraduate focus groups, the library at Berkeley has taken several steps. In the focus groups, students discussed their discomfort with electronic resources. In response to techno-anxiety, the teaching library designed a program of drop-in sessions, tailored to students’ schedules and widely advertised. Sessions included information about the far-flung organization of the library’s multiple branches and about planning research projects early so that needed materials can be recalled from other users. These aspects of the library’s organization have been emphasized in response to students’ lack of knowledge about libraries beyond Moffitt and Doe Libraries as evidenced in the focus groups.

Beginning in Spring 1994, electronic mail accounts began to be widely distributed to undergraduates. Class communication via e-mail has become de rigueur, and students seem much more interested in learning to use the catalogs; to mail themselves citations, abstracts, and full-text articles; and to use Internet resources. Sessions in the use of the online catalogs, Gopher, and World Wide Web were designed and are now taught in a computer laboratory by Teaching Library staff, incorporating time for hands-on practice at the end of each presentation so that students can try out what they have learned in a learning-friendly environment with an instructor present.

Throughout this period, the library continued its program of faculty seminars, adding sessions covering the Internet and advanced MELVYL searching. There were so many applicants in Fall 1994 that sessions had to be added and some faculty turned away. If faculty are made aware of the complexity and value of such resources, they may be more likely to share this knowledge with their students and to be sympathetic with the need to integrate information-seeking skills in their classes.

Because those undergraduate focus group participants who had attended course-integrated library instruction sessions seemed to retain more, the Teaching Library has done an extensive amount of outreach to pursue the goal of increasing the number of course-integrated library instruction sessions with positive results. In Fall 1993, the Teaching Library reached 1,597 students, faculty, and staff through its programs. In Fall 1994, the number of students reached had nearly doubled—to 2,771. A well-advertised program, which has the full support of the faculty, is critical to the library’s teaching mission.
Another initiative underway at this time at Berkeley was the library's reorganization to make the physical and intellectual organization of services more rational. This task was occasioned by the construction of a four-story underground addition to Doe Library, the historic but hardly-conducive-to-the-twenty-first century building housing Berkeley's central research collections in the humanities and social sciences.

Because of upcoming seismic work, a "critical path" of necessary physical moves was developed by the Library Architect, Director of Doe and Moffitt Libraries' Services, and a Space Planning Committee. With faculty input, a Government Social Science Information Service was created to be located in close proximity to the General Reference (Humanities) Service. The new service consisted of the former Government Documents Department and social sciences reference. There are plans to relocate and bring together other portions of humanities and social sciences services to make using the library easier and more logical, thus addressing concerns raised by undergraduates in the 1993 focus group discussions.

The new underground expansion has doubled the amount of stack space on campus, and added 450 wired study spaces and eighteen enclosed study rooms suitable for groups of four to eight students. Seismic corners on the Moffitt Library building added ten enclosed rooms for sixteen to twenty-four students. Both buildings are now open until 2:00 A.M. While not adding more hours to current library hours, the underground addition has added another 450 study spaces. Equally important, eighteen group study rooms have also been added, which focus group members had indicated were highly desirable.

The library has aggressively addressed the issue of security in the new underground addition, with each floor as large as a football field. As a result of placing security guards in the building, the issues of a quiet study environment in the library and student safety—further concerns raised by undergraduates in the 1993 focus group discussions—have begun to be addressed in the physical reorganization of Doe and Moffitt Libraries brought about by the construction of the four-story underground addition.

**Focus Group Impact on UCLA's Undergraduate Library Services**

At UCLA, the information gained from the focus groups and through the surveys has not yet been applied to "transforming UCLA." There are some very clear but, for some, troubling conclusions that can be reached from the data.

User education efforts at UCLA have been expanding dramatically at the expense of professional reference assistance. As mentioned previously, professional reference assistance is available sixty-two of the eighty-seven hours per week that the library is open. Bibliographic instruction sessions recently numbered 250 with close to 6,000 students being reached in 1992-1993.
While the focus groups were split on the issue of desire for classroom instruction, the written surveys clearly showed that many undergraduates do not list workshops and sessions in library use high in their list of priorities. Reference desk hours have been declining, yet in the written surveys the students rank reference help almost as high as reserve readings and photocopying in terms of desired services at the undergraduate library. One interpretation posed by the UCLA author of this article is that professional resources should be redirected to providing more reference service hours and teaching fewer bibliographic instruction sessions.

Undergraduates often have time management problems. At a university such as UCLA, where the average undergraduate works sixteen hours per week (according to survey results); and must take a minimum of four courses per quarter to maintain full-time status (part-time undergraduates are not permitted at UCLA); not to mention social, family, and community service activities, it is easy to see that library assignments may be put off until the last minute. Since the UCLA students show little interest in, nor do they claim to benefit from, advanced instruction in library use, staff needs to provide assistance to them when needed. This is what characterizes "one-on-one" reference service, and it may be required at 8:00 A.M. on Tuesday, 10:00 P.M. on Thursday, 8:00 P.M. on Sunday.

The students also wanted longer library hours. They did not make as much use of the library's core book and journal collections as they did of the reserve collection. This is a common phenomenon at large universities which have combinations of central research, separate undergraduate, and branch subject libraries. A reallocation of resources could be made to cut materials acquisitions in the college library, which are 75 percent duplicated in other campus libraries, to fund longer service hours. In this case, it would be very feasible to transfer one-quarter of the college library materials budget to the staff line and provide longer library hours and, again, more reference assistance. These are but two of many possible changes that could be initiated at UCLA as part of utilizing stakeholder input in strategic planning.

Counter-Intuitive Results

Focus groups often yield information that is counter-intuitive to the prevailing view of the environment. Three factors relating to the students' experiences surprised the library staff at Berkeley: (1) students were largely unaware of the branch libraries until rather late in their academic careers; (2) students were much more inexperienced in using the library's online systems than staff imagined them to be, and most in the groups did not own their own computers; and (3) students, whom staff imagined were completely enthralled with online resources, spoke eloquently about preferring books and printed sources over computer resources. No such surprises arose at UCLA.
CONCLUSION

Both institutions found focus groups to be an effective mechanism for accumulating organized feedback from a group that often has no chance to voice its opinion. A number of issues require further scrutiny.

First, the methodology by which focus group participants were selected differed importantly. At Berkeley, a sample of students was telephoned from randomly generated student lists. At UCLA, self-selecting students responded to advertisements placed all over campus. Did the students' motivation for participating in the focus groups differ markedly at each campus and thus skew results? While the mix of lower division students to upper division students participating in the focus groups was roughly similar (35 percent to 65 percent at UCLA; 42 percent to 58 percent at Berkeley), the majors of the students at the campuses were dissimilar. The breakdown at UCLA was 46 percent humanities, 35 percent social sciences, 12 percent sciences, and 7 percent undeclared majors. Berkeley's mix, on the other hand, was 11 percent humanities, 17 percent social sciences, 17 percent sciences, 9 percent unspecified double majors, and a whopping 46 percent undeclared majors. Second, a comparison of the responses to the UCLA focus group and the Berkeley group reveals quite a difference regarding desire for library instruction. Does the fact that a librarian was in the room at Berkeley and not at UCLA have a bearing on these differences?

A third issue is the interpretation of the gathered data. Conclusions reached from the data can be disparately interpreted by different individuals, and a variety of paths can be taken as a result. One drawback of focus groups is that they do not involve large numbers of the population being surveyed. Is it advisable to make changes in operations based on input from such a small percentage of the user population?

At Berkeley, some directions taken as a consequence of the focus groups, acknowledging the risk taken of basing new services on input from relatively few users, were to:

- simplify use of services and collections;
- concentrate on group instruction;
- place a higher priority on making users self-sufficient; and
- teach students to exploit effectively the panoply of print and electronic databases available on campus and through the Internet because of the techno-anxiety uncovered in the focus group sessions.

One mechanism for doing this was through a series of well advertised and attended drop-in and course-integrated instructional sessions. Other initiatives included:

- emphasizing the breadth and depth of the collections in orientations to the library;
- expanding the space of late night study hall and exploring a twenty-four hour study hall; and
- increasing library security.
The risk has paid off in more sophisticated library users and in many more users being reached through instruction than had been previously reached.

Scrutinizing results from the focus groups and surveys done at UCLA led the previous head of the college library to postulate that a strategic planning goal might be to:

- cut down or drop instructional sessions;
- reduce collection size; and
- increase reference desk hours from resulting savings.

At Berkeley, the results of the focus groups and other library surveys have been useful in discussing students' perceptions and knowledge of the library with faculty and in outreach and publicity about library collections and services to faculty and graduate student instructors. Being able to cite or quote how students perceive a research problem, or how they access databases—or their inability to do so—can provide a compelling argument for integrating research skills into the curriculum. Partially as a result of the focus group surveys, an information literacy survey of graduating seniors in political science and sociology was undertaken in Spring 1994. Those results, which showed dramatically the students' lack of ability to do effective library research, were shared with faculty. Faculty were troubled by this information and have been more receptive to integrating information-seeking skills into their coursework. In Spring 1995, the research skills of an additional slice of Berkeley seniors, those in history, history of art, and philosophy were measured. These results closely paralleled those of the social sciences students.

As a result of the UCLA surveys, the former UCLA College Librarian, now at Denver University, is currently conducting surveys at Denver University; University of Colorado, Boulder; and Colorado State University. These surveys partially replicate the UCLA survey. Results should be available in Summer 1995 and will be used for strategic planning purposes in these institutions. A comparison of the results at the three institutions will also be made.

It is difficult to draw any conclusions about the current level of computing awareness at UCLA and UC Berkeley based on the 1993 surveys. First, the computing environment within the libraries, campuses, and national scene is clearly a moving target. Second, the academic environment has changed so that e-mail and newsgroups, as examples, are now regularly used by students and faculty in and out of the classroom. Reserve collections are beginning to be made available electronically. However, use of these resources does not necessarily translate into mastery of search, filtering, and evaluative techniques required for effective information seeking.
At both institutions, focus group interviews with undergraduate students proved to be a particularly useful tool to elicit information to lead planners in new strategic directions. While library staff often collect useful anecdotal information from students in a variety of informal settings, it is more effective when they can collect evidence from planned focus group surveys that define themes of the undergraduate experience. Library staff can benefit from knowing what the issues are and in seeking solutions to enhance undergraduate academic programs at our institutions.
APPENDIX A

Focus Group Questions Asked at UCLA

A. For what purposes do you use the Library?
B. When do you use the UCLA Library?
C. How often do you use the UCLA Library?
D. Which library services currently being provided are critical for your educational and research needs?
E. Which services are being provided effectively by the Library?
F. Which services need improvement? In what way?
G. How do you feel about the following services:
   1. Hours
   2. Reserves
   3. Past exams
   4. Core collection
   5. Reference assistance
      a) What reference materials do you use?
      b) The quality of the assistance from the reference librarians
   6. Term paper assistance
   7. Teaching library use
   8. Computing lab
   9. Study space
   10. Group study rooms
   11. Lounge area
   12. Current periodicals
   13. Current newspapers
   14. ORION (UCLA online catalog, i.e., user friendly)
      a) Do you have a PC/MAC & modem?
      b) Are you aware of the free Orion accounts?
   15. MELVYL (The MELVYL system is a centralized information system that can be reached from terminals in libraries at all nine campuses of the University of California. The system can also be reached by any terminal or microcomputer with dial-up access to UC computers connected to the MELVYL system. Network access to the system is available to all users on the Internet. The MELVYL system includes a library catalog database, a periodicals database, article citation databases, and other files.)
   16. Check-out policies
   17. Phone renewal
H. Would you attend library-sponsored workshops that the Library would offer on such topics as researching a term paper or advanced ORION/MELVYL searching?
I. What other topics for workshops would interest you, if any?
J. What additional services would you like the library to provide?
APPENDIX B

Focus Group Discussion Guide Used at Berkeley

1. Last use of campus library
   How recently? Which one? Purpose—study, research, other?
   How used (in person, remote access, other)? Why that library?
   How does it compare with typical pattern?
   If more than a month ago, any special reason why the Library was not used more recently?

2. If you ever used Moffitt (the undergraduate library): Which services in Moffitt are most important to you? Reserves, place to hang out with friends, Media Resources Center, term paper advisory service, short-term loans?

3. How you got acquainted with the Library and facilities?
   Any special orientation or instruction? (If so: how it happened/learned about)
   Need to know more? What? What has kept you from learning this? Steps taken when trouble finding what is needed or wanted?

4. Experience in using the library
   Best and worst aspects?
   Need for more books v. longer or different hours?
   Pros and cons of studying at home vs. at a campus library?
   Need for additional services? (Any other basic library services—not available now—that you would be willing to pay for, for added convenience?
   Specific improvements and additional services needed (more computers, typewriters, better lighting, photocopiers, etc.)
   Most useful parts of the collections regularly needed (If cuts necessary, set priorities)
   If cutbacks were necessary, which changes would hurt the least?
   Feelings about automation, computer literacy?
   Preferences for printed materials vs. CD-ROMs and other databases?
   Preferred methods of assistance? Staff? Online catalog help screens? Handouts? Other?
   How would you rate helpfulness of staff?
   Ever need to borrow materials from other libraries? How long are you willing to wait for such materials?
   How term “research” is used? How do you go about it (what do you use/what do you do)?

5. Use of other libraries? If any, which (UC, Stanford, other)? Why? How got acquainted with them?

6. Access to library
   Computer, modem at home or elsewhere? Dormitory or campus drop-in computer facility? What experience with computers? In person visits?
   Are the hours adequate (when is the student most likely to visit the library)?

7. How library should try to reach students?
   Where do you look for information (campus newspaper, dormitory mail, U.S. mail)?
   Best time in the semester to reach out?

8. Other use of library (in addition to books/materials)?
   Place to study, meet people, other?

9. If money were no object, most important way(s) for library to improve? If finances did not permit, which improvements would you most likely be willing to pay for?
APPENDIX C

UCLA Undergraduate Written Survey Questionnaire Results on Library Use

1. Class/Yr
   286  Freshman
   323  Sophomore
   271  Junior
   224  Senior

2. Age
   20  Under 18
   802  18-21
   220  22-25
   60  26-30
   45  31 +

3. Ethnic Background
   60  African-American
   411  Asian-American
   288  Caucasian
   215  Hispanic/Latino
   58  Native American
   85  Other

4. What is your major field of study?
   156  Humanities
   580  Social Sciences
   325  Sciences

5. Do you live in the dorms?
   435  Yes

6. If not, do you live within walking distance of UCLA?
   601  Yes

7. Do you work while attending UCLA?
   583  Yes

8. Do you have a personal computer?
   619  Yes
   e-mail?
   250  Yes
   ORION account?
   157  Yes

9. How often do you use College Library?
   41  Never used
   40  Once a year
   80  Once a quarter
   60  Once a month
   186  Twice a month
   408  Once a week
   130  Twice a week
   140  More often

10. When do you use College Library?
    40  First half of quarter
    121  Second half of quarter
    864  At finals
    79  Between quarters
    658  Throughout quarter
    80  NA
11. Why do you use College Library?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Used</th>
<th>Used regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>To consult library materials</td>
<td>511</td>
<td>390</td>
</tr>
<tr>
<td>To borrow library material</td>
<td>528</td>
<td>533</td>
</tr>
<tr>
<td>To make photocopies</td>
<td>579</td>
<td>106</td>
</tr>
<tr>
<td>To study own material</td>
<td>682</td>
<td>75</td>
</tr>
<tr>
<td>To use computers to type papers</td>
<td>206</td>
<td>250</td>
</tr>
<tr>
<td>For information and assistance from library staff</td>
<td>316</td>
<td>13</td>
</tr>
<tr>
<td>To check out reserve items</td>
<td>617</td>
<td>119</td>
</tr>
</tbody>
</table>

12. Libraries/services used (one check) those used regularly (two checks)

<table>
<thead>
<tr>
<th>Library/Service</th>
<th>Used</th>
<th>Used regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book collection</td>
<td>486</td>
<td>390</td>
</tr>
<tr>
<td>Reference service</td>
<td>509</td>
<td>353</td>
</tr>
<tr>
<td>Audio listening</td>
<td>191</td>
<td>66</td>
</tr>
<tr>
<td>Humanities computing</td>
<td>96</td>
<td>86</td>
</tr>
<tr>
<td>Study space</td>
<td>346</td>
<td>412</td>
</tr>
<tr>
<td>Current periodicals</td>
<td>249</td>
<td>106</td>
</tr>
</tbody>
</table>

**URL**

<table>
<thead>
<tr>
<th>Service</th>
<th>Used</th>
<th>Used regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circulation desk</td>
<td>389</td>
<td>168</td>
</tr>
<tr>
<td>Reference service</td>
<td>254</td>
<td>146</td>
</tr>
<tr>
<td>Periodicals room</td>
<td>383</td>
<td>173</td>
</tr>
<tr>
<td>Graduate reserve service</td>
<td>33</td>
<td>5</td>
</tr>
<tr>
<td>Catalog information service</td>
<td>82</td>
<td>35</td>
</tr>
<tr>
<td>Public affairs service</td>
<td>116</td>
<td>25</td>
</tr>
<tr>
<td>Special collections</td>
<td>102</td>
<td>3</td>
</tr>
<tr>
<td>East Asian Library</td>
<td>36</td>
<td>29</td>
</tr>
<tr>
<td>Microform reading service</td>
<td>172</td>
<td>18</td>
</tr>
</tbody>
</table>

**Other campus libraries and services**

<table>
<thead>
<tr>
<th>Service</th>
<th>Used</th>
<th>Used regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>120</td>
<td>48</td>
</tr>
<tr>
<td>Biomed</td>
<td>386</td>
<td>192</td>
</tr>
<tr>
<td>Chemistry</td>
<td>199</td>
<td>72</td>
</tr>
<tr>
<td>Engineering/Math</td>
<td>135</td>
<td>51</td>
</tr>
<tr>
<td>Geology/Geophysics</td>
<td>90</td>
<td>31</td>
</tr>
<tr>
<td>Management</td>
<td>196</td>
<td>52</td>
</tr>
<tr>
<td>Instructional media lab</td>
<td>235</td>
<td>216</td>
</tr>
<tr>
<td>(Powell)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language lab (Powell)</td>
<td>200</td>
<td>90</td>
</tr>
<tr>
<td>Law</td>
<td>109</td>
<td>30</td>
</tr>
<tr>
<td>Map</td>
<td>59</td>
<td>1</td>
</tr>
<tr>
<td>Music</td>
<td>195</td>
<td>38</td>
</tr>
<tr>
<td>Physics</td>
<td>79</td>
<td>21</td>
</tr>
</tbody>
</table>

13. How would you rate our service?

<table>
<thead>
<tr>
<th>Service</th>
<th>Good</th>
<th>Satisfactory</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service</td>
<td>521</td>
<td>518</td>
<td>19</td>
</tr>
<tr>
<td>Lending policies</td>
<td>479</td>
<td>515</td>
<td>34</td>
</tr>
<tr>
<td>Book collections</td>
<td>467</td>
<td>481</td>
<td>35</td>
</tr>
<tr>
<td>Study facilities</td>
<td>393</td>
<td>520</td>
<td>120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Staff</th>
<th>Instructive</th>
<th>Helpful</th>
<th>Too busy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>203</td>
<td>687</td>
<td>97</td>
</tr>
</tbody>
</table>
14. Where do you do most of your studying?

<table>
<thead>
<tr>
<th>In the Library</th>
<th>Where you live</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>283</td>
<td>785</td>
<td>48</td>
</tr>
</tbody>
</table>

15. Last quarter, how many books and other materials do you estimate you borrowed from College Library?

<table>
<thead>
<tr>
<th>Assigned reading</th>
<th>For pleasure</th>
<th>For research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,489</td>
<td>871</td>
<td>312</td>
</tr>
</tbody>
</table>

16. Does College Library generally have the books/materials you want to read?

<table>
<thead>
<tr>
<th>For study</th>
<th>For pleasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>767</td>
<td>456</td>
</tr>
</tbody>
</table>

17. Rate your knowledge about how to use a library before coming to UCLA.

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Some</th>
<th>A lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>132</td>
<td>709</td>
<td>218</td>
</tr>
</tbody>
</table>

18. What is helpful in assisting you to use libraries?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>College Library Guide</td>
<td>195</td>
</tr>
<tr>
<td>College Library tours</td>
<td>158</td>
</tr>
<tr>
<td>College Library staff</td>
<td>615</td>
</tr>
<tr>
<td>Library handouts</td>
<td>318</td>
</tr>
<tr>
<td>High school courses</td>
<td>69</td>
</tr>
<tr>
<td>GSLIS 110</td>
<td>121</td>
</tr>
<tr>
<td>UCLA Lib component/Eng 3</td>
<td>290</td>
</tr>
<tr>
<td>Public library</td>
<td>153</td>
</tr>
<tr>
<td>Other college/high school lib staff</td>
<td>88</td>
</tr>
<tr>
<td>ORION/MELVYL demos</td>
<td>423</td>
</tr>
<tr>
<td>Fellow students</td>
<td>433</td>
</tr>
</tbody>
</table>

19. Do you feel that further guidance in how to use the library and its sources would help you?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>565</td>
</tr>
</tbody>
</table>

If yes, which of the following would be useful?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Library tours</td>
<td>154</td>
</tr>
<tr>
<td>Term paper clinics</td>
<td>252</td>
</tr>
<tr>
<td>Self-help videos</td>
<td>155</td>
</tr>
<tr>
<td>Library workshops</td>
<td>173</td>
</tr>
<tr>
<td>Handouts/pamphlets</td>
<td>317</td>
</tr>
<tr>
<td>For-credit orientation courses</td>
<td>166</td>
</tr>
<tr>
<td>More instructional/directional signs</td>
<td>315</td>
</tr>
<tr>
<td>Self paced library skills booklet</td>
<td>238</td>
</tr>
<tr>
<td>Individual appointments</td>
<td>184</td>
</tr>
<tr>
<td>w/librarians</td>
<td></td>
</tr>
</tbody>
</table>

20. Which services could be eliminated if needed because of budget cuts?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio listening</td>
<td>168</td>
</tr>
<tr>
<td>Library use instruction</td>
<td>135</td>
</tr>
<tr>
<td>Reference service</td>
<td>12</td>
</tr>
<tr>
<td>Past exams</td>
<td>72</td>
</tr>
<tr>
<td>Travel guides</td>
<td>491</td>
</tr>
<tr>
<td>Computing labs</td>
<td>64</td>
</tr>
<tr>
<td>Microforms</td>
<td>68</td>
</tr>
<tr>
<td>Periodicals</td>
<td>36</td>
</tr>
<tr>
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As Time Goes by . . . : Revisiting Fundamentals

DAVID F. KOHL

"You must remember this . . .
The fundamental things apply
As time goes by."

From the movie Casablanca

ABSTRACT

As we reinvent libraries for the twenty-first century, it is appropriate that we revisit our vision of library instruction—an emerging dimension of library services which has been largely pragmatically based. Such a review suggests that four main areas require attention and redefinition: (1) the reference/instruction relationship; (2) the vision of creating the self-sufficient user; (3) the importance of replacing courses with curriculum; and (4) the need for significant outcomes. Firsthand examples from a variety of ARL libraries are used.

INTRODUCTION

The problem with growing up like Topsy is, well, that you grow up like Topsy. When asked who was in charge of her upbringing, Topsy replied, "I jus growed up." Library instruction is not much different. Even with the creative and committed leadership of Evan Farber, Virginia Tiefel, and others, library instruction pretty much "jus growed up." On the one hand, such frontier freedom contributed considerable energy, creativity, and vitality to the process, on the other, it has left more than a few loose
As a library administrator who is now some distance from the instructional "madding crowd," these loose ends have come more clearly into focus and are, I believe, important issues for the continued and productive development of library instruction.

The overall theme of the loose ends has to do with the piecemeal implementation of library instruction. This is by no means criticism in any dismissive manner. Having been intimately involved with library instruction in four ARL libraries, this author fully understands and appreciates the degree to which practical politics, individual personalities, the vagaries of local organizational structure (both within and without the library), and just practical operational necessity interferes with, and influences, logic and educational theory in the development of an instructional program. Indeed, the wonder is not (to paraphrase Dr. Johnson's celebrated remark about the dancing bear) that our instructional programs are not more developed and widely available, but rather that we have any decent ones at all.

Nevertheless, as creative and resourceful as both librarians and their occasional traditional teaching faculty supporters have been, the development of library instruction has been largely a process of experimentation and discovery, capitalizing on opportunities in an often indifferent or hostile environment with improvisation and make do. While such an approach has been necessary in the past and, given the academic library's status in the academic pecking order, will likely always be required to some degree, library instruction has now established itself well enough for us to pause and consider some broader issues. The trappers, traders, and explorers have explored and mapped the territory and have sent back their reports; now it is time for the settlers. The issues, or loose ends, which now require attention, form an agenda in four primary and intimately related areas.

**Establishing Primacy of Instruction**

One of the fundamental problems we face today in carrying out the "access to information" part of the library mission is the inadequacy of the traditional reference model in a period of chronic funding shortages and ongoing radical technological change. Providing intellectual access to library information resources through one-on-one, face-to-face interactions has never been particularly efficient. In an earlier period, when library funding was better and information needs were simpler, such inefficiency was a more or less manageable problem. The job of the reference librarian, even twenty years ago, was more one of explaining the fine points of information tools rather than teaching basic new technologies. For example, it was possible to assume that most patrons understood alphabetical order when showing them how to use a print tool, whereas it is not wise to make the analogous assumption today (familiar-
ity with Boolean searching or proximity statements, for instance) when explaining the use of electronic tools. Further, there was more continuity in the information experience between academic generations and schooling levels. The size and complexity of the card catalog, for example, may have changed considerably from high school to college to research university, but these all worked on the same basic principle. And the tools which professors used as graduate students were basically the same tools their students were using.

As we all know, the information environment is radically different today. Changes in information tools are so basic and relentless that it is difficult for reference librarians to keep up, let alone provide interpretation and education to patrons in their use. Students are less prepared and have more diverse needs, and a large proportion of the faculty bring a personal experience with information tools that is so outmoded, they cause serious problems for both themselves and their students rather than, as formerly was possible, assisting public service librarians in their mission.

The reference model, with its locus in individual interactions, simply cannot cope with this kind of radical change—especially when reference staffs are more likely to be faced with downsizing rather than massive increases in personnel. The idea that library instruction whose classroom approach multiplies the librarian's ability to provide information access by twenty to thirty times is not new. What does need to be reconsidered, however, is instruction's place in the library organization.

As it has grown up, instruction has tended to find its home in reference departments, often as a kind of stepchild. Two important changes need to be made:

1. Instruction needs to be seen as the primary means by which the library provides intellectual access to the collection and other information resources provided by the library.

Reference and information desk services continue to be important but as rather specialized add-ons to the basic instruction function. We need to switch the place of reference and instruction, with instruction seen as the primary means of providing intellectual access to the collection. Expensive highly trained reference librarians can provide the frosting but not the basic cake.

2. Instruction services need to be located in their own department and reporting as highly as possible within the library organization.

My experience has been that it is very difficult for the instruction program to be taken seriously within the reference context. There are not only substantial philosophical differences in how adequate intellectual access is provided, but the shortages and stresses on the reference
department make it difficult to staff adequately, support, and develop a new program which appears to be cannibalizing the more traditional one. Instruction programs cannot adequately or fully develop as "little sisters"—they need a room of their own.

Reporting as highly as possible within the library organization is not to give the instruction unit "unfair" advantage within the library but is rather an organizational necessity given the university or college environment. Such reporting is an acknowledgment of the importance of upper-level library administration's helping to smooth and facilitate the path of instruction outside the library with the traditional teaching faculty and the nonlibrary administrative organization. It is difficult for library instructional staff to have access to the necessary forums, opportunities, resources, and information without upper-level library administrative help.

FOCUSING ON THE SELF-SUFFICIENT USER

Another one of the problems of "just growing up" is that it is possible for an important value to become a shibboleth—i.e., it continues to evoke religious veneration even when carried to an inappropriate extreme. This has happened with service. We have become so focused on service, or our particular definition of it, that we have come close to losing our way.

The legitimate concern to provide good point-of-need service at the reference desk has led us too far in the direction of creating dependent users. Although this author is convinced it is not their intention, the concern of reference librarians to personally mediate access to information has led them to create environments which not only encourage, but at times require, dependency on the part of patrons.

The classic example of this orientation is the organization of reference areas. Although libraries have spent a great deal of time and money classifying library materials in an organized and effective manner, reference units invariably regroup the reference materials in ways that improve the efficiency of, and convenience for, the reference staff but which totally mystify most patrons.

The common complaint that library instruction simply makes more work for reference is not surprising. A good instruction program teaches patrons the underlying logic of the library's information systems. When the reference department disrupts that overall logic, the potentially independent user is forced once again to become a dependent user and seek reference help. The reference librarians must then mediate a system which they themselves have disrupted. Although well intentioned and possibly, in an earlier simpler world, appropriate, it no longer makes sense.

Two important changes need to be made:

1. The primary public service goal of academic libraries must be to educate independent library users. The goal of education is not to provide information to students so that they are always dependent on their
instructors when they enter their professions or careers. Rather, the
goal of education is to create independent professionals who can
operate effectively and creatively on their own. The same must also
be true in teaching students how to use information systems. Particu-
larly as the use of information systems increasingly takes place out-
side the library building environment is the concept of independent
user important.

2. The library needs to be reorganized to facilitate and encourage inde-
pendent users. More than the reference area needs to be considered
here. After several years as head of the Undergraduate Library (UGL)
at the University of Illinois, I was astonished to discover that the chronic
complaints I had been receiving about the stacks being out of order
were in large part due to a UGL shelving policy which ran the over-
sized books along the bottom row of the stacks in their own sequence
totally independent of the shelving sequence of the upper six shelves.
The UGL circulation staff were not being perverse, they were just
providing good "service." Years ago, someone had complained that
having heavy oversized books on the upper shelves was both inconve-
nient and possibly dangerous. Obviously, the solution adopted was
not a solution compatible with the concept of independent users.
Ironically, the reference staff was as unaware of this "solution" as most
of the patrons.

My experience over the years is that there are many such obstacles to
independent use of the library. One of the primary tasks of library in-
struction, therefore, is not just educating the students but making sure
that the library is organized in such a way that independent use is possi-
ble. The intellectual access taught in instruction programs must be re-
lected in the physical organization and layout of the library—creating a
dual role and responsibility for instruction staff.

ORGANIZING LIBRARY INSTRUCTION AS A CURRICULUM

Yet another problem with Topsy-like development has been too great
a focus on individual courses for particular situations and not enough
focus on the development of a logical focused progression of instruction
in the use of modern information tools—a curriculum. Developing such
a curriculum involves a successful struggle with the incorporation of at
least three elements: (1) the logical and progressive development of skills
and understanding in the use of information tools; (2) the appropriate
relationship and counterpoint to the subject content of the student's edu-
cational development provided by the traditional professoriate; and (3) the
acknowledgment of the diverse needs and strengths of a very complex
student population.

In my experience, most veteran public service academic librarians
have a good sense of the kinds of library skills and knowledge base which
first year students need to have, of the additional skills which juniors and
seniors need, and of the specialized skills required of graduate students. And as public service personnel interacting daily with professors and students, they have the necessary background to have an intuitive sense of how subject content and student diversity need to be integrated. It just requires some thought, some time, and much hard work to formalize this understanding and express it as a focused and integrated curriculum.

The main problem is not that developing a curriculum is impossible, but that librarians have not traditionally posed the issue to themselves in these terms. In contrast, the concept of the “reference interview” is widespread and evokes a rich context of experience, research, and professional dialogue for academic public service professionals. “Curriculum development” (a reflexive mantra for the traditional teaching faculty) needs to become, for instruction librarians, as familiar and rich a concept as “reference interview.”

Although we have begun the process of developing an integrated instruction curriculum at Cincinnati, we are finding that library faculty are as independent as their traditional faculty counterparts. Such faculty independence, in conjunction with the newness of the concept, makes for slow going. Still, we are making progress and are particularly hopeful that the concept of an instruction curriculum will pay large dividends in the future.

FOCUSED ON OUTCOMES

The final problem— the legacy of a pragmatic Topsy-type childhood— is the ease with which one can lose one’s way, wasting time and resources on misguided or trivial efforts. As Yogi Bera once commented: “Unless you know where you’re going, you’re not likely to get there.” At the University of Cincinnati, a review of our instruction goals revealed that we were devoting considerable staff time and resources to a dubious library component of the Freshman English program. We were going through many motions, but the result was not satisfactory or even all that clear. We have, therefore (with some trepidation), indicated that we will not continue to participate in the program based on the past. Until we undertook a review of expected outcomes, success was measured by the amount of effort put into the process rather than by desired results—namely, what we expected students to learn.

There is also a practical advantage to outcomes. As legislatures and accrediting agencies are increasingly calling for outcomes-based education, such demand provides an opening for the library instruction agenda. In Colorado, a legislative call for outcomes-based education provided an opportunity for the library to define information literacy as one of the ten outcomes of a university education. Having such an official statement provided a tremendous advantage for the development and acceptance of library instruction.
Perhaps one caution is appropriate in this area. Most of the outcomes reported in the early days of library instruction involved students self-reporting on their satisfaction with library instruction courses or lectures. While this is not inappropriate, it is not necessary for library instruction programs to limit themselves to such subjective measures. At the University of Illinois, for example, we were able to determine a measurable increase in the sophistication and quality of students' bibliographies as independently verified by both librarians and course instructors. In short, students did not just feel good about instruction classes, they were actually able to make better use of information resources in meeting their course requirements.

CONCLUSION

It is perhaps ironic, in a period when faculty status for academic librarians has stalled—even reversed—that the teaching mission for librarians has become so important. While seeing one-on-one reference service as teaching is by no means inappropriate, present day economic and technological pressures mean that we must move beyond this model. There is much we can learn from traditional teaching colleagues who are, in many cases, trying to reclaim their teaching role. Nevertheless, whether through greater use of the traditional classroom approach or through the innovative use of technology, our central goal has to be finding ways to leverage the limited library professional public services resources available to us to fulfill our central public services mission—i.e., providing intellectual access to the library's resources. A critical key to this process is library instruction, not necessarily as we have been doing it, but as we need to be doing it—by making fundamental improvements.
Plus Ça Change . . .

Evan Ira Farber

ABSTRACT
Until recently, most reference and bibliographic instruction librarians believed their primary role in undergraduate education to be that of teaching students how to find information. Now the new information technology makes finding information so quick and easy that it is causing these same librarians to reconsider their role. This article looks at the factors leading to that reconsideration and suggests that perhaps the situation is not much different from what it was—that at least there are more similarities than differences.

One of the few advantages of achieving the status of an elder statesman is the license it gives to reflect or reminisce and still have those reflections or reminiscences listened to or read with a good bit of tolerance, even perhaps with interest—albeit a bemused interest. It is tempting to indulge in these reminiscences—too tempting to resist, probably, but they will be kept to a minimum. This article will encompass some reflections—reflections that take advantage of the experience garnered over thirty years of working with undergraduates, and reflections that look at both some of the changes as well as some of the constants of implementing a successful program of bibliographic instruction. I will then reflect on how those changes—rather, if those changes—will help provide some direction in the years to come.

The title, Plus Ça Change, is, of course, only half of the aphorism, loosely translated: “The more things change, the more they are the same.” The latter half, plus c'est la même chose, is the more intriguing part of the
saying. In examining library use instruction over the past thirty years, it is easy enough to point to those factors that have changed; all, or certainly almost all, the changes relate to computer technology. Thirty years ago, those in bibliographic instruction (it was not called "BI" then but "library orientation" or "library use instruction"; the first use of the term "bibliographic instruction" in Library Literature seems to have appeared in 1974) were concerned with teaching only a few tools such as the Library of Congress subject heading volumes, a few specialized encyclopedias, some Wilson indexes, other disciplinary indexes or abstracting services, and the use of printed bibliographies. Some introduced students to the Library of Congress classification or reminded them of Dewey's mnemonic devices. Those who worked in libraries that were government documents depositories may have explained the SuDocs classification. One looks at the simplicity of our early handouts with some yearning—but surely that same simplicity would seem almost laughable to younger bibliographic instruction librarians now. Today there are not only many more specialized reference works in print—i.e., encyclopedias, handbooks, and bibliographies—but also students have to be shown the idiosyncracies of our individual systems' OPACs and introduce them to the proliferation of electronic databases available on standalone CD-ROMs or through the OPACs. And most recently—and prominently—we must cope with the Internet and what sorts of information—bibliographic, numeric, and other—are increasingly available through it. These decades, and especially the last few years, have seen an enormous change, or rather a series of changes, in the content of what we feel is necessary to convey to students; we have constantly scrambled to keep up with those changes—or felt very guilty for not giving students the latest and the best. What factors have remained constant? The faculty, first of all, has remained constant.

In the late 1960s, the bibliographic instruction program at Earlham had achieved a widespread reputation: we were working with faculty members in almost all disciplines, reaching a substantial proportion of our students, and the staff's excitement and enthusiasm about the program's successes were obvious. At the same time, we were still frustrated by the fact that we were not working with the other faculty members (more than just a few) whose classes had library-based assignments. It was puzzling. We knew that most faculty were dedicated and conscientious, and really concerned about their students' learning. We thought that they must know that bibliographic instruction would enhance learning, would make students' papers more interesting, and their teaching more fun. With even longer experience, I had begun to understand—not excuse—them and, a few years later, I characterized faculty who resisted our overtures as people who thought they could not spare the time either to talk about instruction or to implement it; were territorial—that is, reluctant to share
their classes with anyone; were mostly taught the way they were taught; had fragile egos so that it was risky to criticize their library assignments or even to make suggestions; and they could not think of librarians as peers with whom they could share their students (Farber, 1992, pp. 3-4). All of these, and probably others that I have overlooked, were obstacles to working with faculty. And yet if, as I said, those same faculty were dedicated and conscientious—and there is no question that most of them were—there had to be a way of convincing them that librarians could help their students' learning and their teaching. The key, it seemed, was to take advantage of that dedication while keeping the obstacles in mind and working around them. It took time, patience, perseverance, and more than a bit of politicking, but most faculty were eventually won over.

Has that analysis of faculty resistance changed? To some extent, yes. It is a different generation of faculty—they are more open, more democratic, less defensive. And because library technology has changed things so much since many of these faculty were in graduate school, they know librarians can find information they cannot; in a sense, they have gained a new respect for librarians. But they still exhibit some reluctance to share the classroom or to take the time to plan library instruction, still overestimate students' abilities to use library resources, and still do not really understand how improving that ability can help make students more independent, more interested, and more interesting, and thus more rewarding to teach.

However, things are changing, if slowly. First of all, the ubiquity of bibliographic instruction has meant that many younger teaching faculty have some familiarity with it, perhaps when they were students. Or they may come to teach at an institution where a bibliographic instruction program exists and, in a sense, be socialized into the uses of that program. A second, and more important, factor is the impact of the new information technology. In the past, one obstacle bibliographic instruction librarians faced was that so many faculty taught just as they were taught. Now, however, faculty recognize that their teaching toolkits must include the Internet, or Dialog, or whatever electronic sources are appropriate for their courses. Because librarians are the ones to show their students how to gain access to these sources and to demonstrate what they provide, faculty members are much more willing to accept librarians as teaching colleagues—not fully accepted in all cases, but at least colleagues to consult and work with.

How about students? When meeting with groups of alumni, one question almost always asked is "What are Earlham students like now?" My typical response is, "Well, their tastes have changed—and, in music, for the worse. They are much more comfortable with the opposite sex, and their dress and hairstyles are much more varied . . . but as for their social concerns, their interests, their study habits, they are pretty much
like you were twenty (or thirty) years ago." Groups of alumni are not particularly interested in hearing about the problems of teaching students how to use library resources. I do not say that students—at the beginning level, anyway—still have little understanding of the range, the richness, the usefulness of the resources of an academic library and again, initially, usually depend on a few things they can find easily in the catalog, be it printed or electronic. First-year students especially underestimate the complexity of finding information, and they also are unaware that there are many tools to help work through that complexity. That is, they bring to the college library the same habits they learned in their high schools—if indeed, they learned any there.

Another characteristic today's students share with those of a generation ago is an inability to discriminate among sources. Rarely have we seen a student who questioned the validity, or even the usefulness, of a book in the library. If a book was in the library, students seemed to infer that its content was reliable, that the information in it must be valid. To help correct this misconception, to encourage students to be more critical in their search for information, we used to point out to them that not only were there books in the library that were not authoritative, but that we even acquired some books because they were good examples of bad books. For example, we would explain that there was at least a shelf of books in the collection which seems to prove that Shakespeare never wrote any of the plays most people attribute to him—i.e., they must have been written by someone with a much better education and background. These books are disparaged by the teachers of courses on Shakespeare, yet the library had purchased them, cataloged them, and they looked very much like any one of the authoritative works written by the most eminent Shakespearean scholars. Why had we bought them? Because, though the books were not products of good scholarship, they represented a significant aspect of Shakespearean studies.

Are today's students less naïve? Certainly about some things, though "cynical" might be a more appropriate word than "naïve."

Students do not believe what they see in the supermarket tabloids or other sensationalist magazines one finds at a checkout counter. They are skeptical about much of what they read in newspapers about politics and not without good reason. But they do believe almost anything that comes from a computerized source. It results, I think, from what Theodore Roszak (1986), professor of history at California State University, Hayward, called "technological idolatry" in his book, The Cult of Information. That attitude of students, the belief that whatever appears on the terminal or whatever comes from the printer is true, is a much greater danger today than, say, the danger of students not knowing about the claims to the authorship of Shakespeare's plays or not recognizing that books published by certain special interest groups are hardly reliable guides to American
political history. Why is the danger so much greater now? Most obviously, perhaps, because of the proliferation of available sources. The example of students’ lack of library skills one used in earlier days was that of a beginning student coming into the university library, going to the card catalog, and finding dozens, maybe hundreds, of items on her topic, not having the vaguest idea of which ones were most important or useful, so probably ending up by just checking out the first few items. Today it is worse; a student can easily get into the library’s electronic catalog and through it to other libraries’ catalogs and perhaps several or more other relevant databases. Confused and overwhelmed by the multiplicity of references, the student turns to some quick simplistic way of getting the information. Not only has the student probably missed much better sources of information, but the quick and precise responses at the terminal give her a sense of accomplishment, of a job well done.

But there is yet another, even greater, danger. Earlier I mentioned students’ finding books that denied Shakespeare’s authorship. There are, of course, ways of evaluating such books, even if one is not an expert in the field and one tries to teach students some of those ways—the use of reviews, the author’s and publisher’s credentials. Those are some of the filters that scholars use. But on the Internet? A delightful cartoon in the New Yorker a couple of years ago encapsulated the problem nicely. The cartoon shows two dogs conversing, one seated at a computer, the other on the floor. The one seated at the computer says to the other dog who’s looking up at him: “On the Internet, nobody knows you’re a dog.” That is true, of course. Nobody knows whether you are a dog, or a Nobel Prize winner, or a flake. Unless one is an expert—someone who knows the field and the players—one really cannot tell anything about the validity, the usefulness of the source. It all looks very much the same. Even experts cannot always tell. Fortunately, academics are beginning to recognize the problem, and a group of librarians recently began to make an effort to solve it. An article in The Chronicle of Higher Education describing the effort points out that what is needed is a project “to impose some structure and standards” on the Internet, that “students and faculty members . . . need authoritative ‘subject access’—a single place on the Net where they can be referred to resources that experts consider worthwhile . . . ” (Jacobson, 1995, p. A29). But it goes on to mention some of the problems such a project will encounter—problems of support, cooperation, bureaucracy, to say nothing of the fact that the Internet is a moving target, constantly growing and changing. It will be, one must recognize, a long time before students will derive any benefits from the application of “structure and standards” to the Internet.

What we have now, then, are students who are using (or perhaps one should say abusing) the new technology and are overwhelmed by material they do not know how to evaluate; faced with so much to read, confused
by the multiplicity of sources and conflicting views, they choose to settle for a quick superficial approach. Could we expect anything else? It is not really that they choose to settle for this quick superficial approach, but that they are forced to settle for less. That is not really very different from the students who used to be faced with hundreds of card catalog trays and very little guidance to their contents.

Given this situation, how will bibliographic instruction change? As far as beginning instruction is concerned, unquestionably it will more and more be computer directed. Students will not have any trouble learning how to find information or learning how to use even the most complex tools. All of that will be built into students' queries on the terminal. Artificial intelligence and expert systems can do a better job of instruction than we do today. For example, the use of workbooks has been shown to be one of the most effective methods for introductory levels of bibliographic instruction; there are, however, some inherent problems in administering their use: they are time-consuming and thus expensive to construct, distribute, and grade, and they invite plagiarism unless they are individualized (which can make them even more expensive). Computerizing them can solve some of those problems and make their applications even more effective (The Ohio State University Library's Gateway to Information system is a good example. See Virginia Tiefel's article in this issue of Library Trends). A computer has infinite patience, no time constraints, does not take coffee breaks or fails to show up on weekends, and it can adapt to individual needs and requests. And soon it will not be just typed-in requests that computers can respond to but spoken ones. Even today there are computers that can understand single-word commands or short phrases with reasonable reliability. Later, when more sophisticated programs using artificial intelligence and natural language technology are plugged in, even the most computer-phobic users should have no problems with using them effectively.

There is also no question that computer-based assistance will go far beyond beginning instruction, that so-called intelligent agents will find and assemble information for users. Some years ago, Apple Computers produced a video showing the Knowledge Navigator, sort of an information valet or what some are now calling a knowbot (knowledge + robot)—that is, an automated valet or maid that knows not only its client's informational needs but also the client's personal qualities to shape the package of information.

If this capability is on the horizon, what is the role of the librarian in teaching students how to find information? Will we, indeed, have a role? If the existence of that role is in doubt, one can legitimately ask: Does it make sense to spend a lot of our time and effort improving the bibliographic instruction we give now? Why try to tune an antiquated model? Why not just mark time and wait for the new model? It seems that there are three possible responses.
The first response is the very obvious one. As service-minded professionals, we are obligated to improve what we do. If we do not improve, we are letting down all those who prepared the way for us and those who follow us, not to mention those with whom, and for whom, we work now. If we do not continually try to improve, we cannot really claim to be professionals.

The second response is more speculative, perhaps, but also more pragmatic. Those knowbots, or information valets, or however those automated retrievers of information will be known, of course entail the use of expert systems; expert systems, in turn, are based on the advice of experts—the ways in which experts respond to queries, or solve a problem, or perform a particular operation. If, then, we expect machines to do really expert jobs, we need to keep improving our models, even systematizing them, so that they can be translated into a computer program. Here again, one can point to the Ohio State University Library’s Gateway to Information system that was very much based on the ways librarians provide bibliographic instruction.

The third response, though, is the one most easily overlooked. For example, a piece in Internet World last year speculated that: “[I]ntelligent agents and filters will be developed to reduce the problems of information overload by providing easy, customized access to information sources” (Miller, 1994, p. 38). The writer of that piece was identified only as Chief Technical Officer of the International Internet Association, but one can be sure he has never been a reference librarian since what he either ignores or is unaware of is the critical role of the reference librarian. Workbooks, as mentioned earlier, have been perhaps the most effective means of giving students some self-instruction in using library resources, and computerized workbooks (e.g., the Gateway to Information system again) are the next logical step. But every workbook, printed or computerized, should be constructed so that one of the steps in it requires meeting a reference librarian. Why? Every public services librarian has seen students come into the library and begin looking around without any idea of what to do or where to go first . . . and then giving up in frustration, for some reason refusing to ask the reference librarian for help. Was it fear, embarrassment, or the male syndrome of reluctance to ask for directions? Whatever it is, the lack of recognition of a reference librarian’s helpfulness is sad and terribly unfortunate.

If there was just one skill, one step, that librarians who are concerned by student (and public) ineffectiveness in using libraries should try to inculcate in those seeking information, it should be: Ask the reference librarian. In constructing a printed or computerized workbook, somewhere in its structure the individual ought to be required to talk to a reference librarian—just to answer a simple question or, better, to approve a particular choice. The purpose, of course, is to ensure that the
person doing the workbook recognizes that a reference librarian is approachable and, indeed, is interested in one's information needs. Certainly, such an encounter is not needed at every step; as mentioned earlier, expert systems will be able to do a lot of what we do now in bibliographic instruction and in basic reference work. One encounter should be enough to overcome that hesitation, that reluctance that prevents so many students from asking for the help they need.

The reason for a reference librarian's intercession with a student at a critical juncture in his or her search is simply that it can result in making a small but significant contribution to that student's education, to that student's ability to evaluate information. The "teachable moment"—that moment when the student needs help in making a choice or a decision—that is when the reference librarian can play an important role. An undergraduate's request for many interlibrary loans, for example, can provide a perfect teachable moment: explaining to the student at the moment of need which items are appropriate and which are not—and why. Several institutions have automated that process, and others are in the process of doing the same. In this case, such automation precludes the possibility of a potentially valuable educational experience. That is why the move toward "disintermediation"—removing the librarian from a procedure that was once performed by individuals and substituting an automated procedure—should be examined carefully to ensure the gain in efficiency is worth the loss of educational benefits.

There is, then, a good case for a continuing emphasis on bibliographic instruction and, one could say, an even greater need for it in the near future. Others are beginning to see it also. Drucker (1994), in his article in the *Atlantic Monthly*, stresses the importance of continued learning in the new knowledge-based society. And in the latest issue of the *Teaching Professor*, there is an item, "Profile of the Autonomous Learner" (1994), that calls for developing "information seeking and retrieval skills," which include the ability to "select what is valuable from the mass of information available" (p. 3).

As the faculty begins to understand how easy it is becoming for their students to drown in the sea of information, that viewpoint will be an increasingly prevalent one. Even students will realize that they will not have any problem finding information, but they will still need help in learning how to sift through, how to evaluate, that information. To be sure, machines will perform better some of our more basic and repetitive tasks. But when it comes to helping a beginning student shape a topic, or interpreting something idiomatically American for a foreign-born student, or recommending something that a foreign student might want to read about an aspect of American history or society—or any other question or request requiring the personal touch—it is hard to imagine reference librarians being replaced. Bibliographic instruction will change, but its thrust will remain very much the same. And so the title, *plus ça change*. . . .
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Bibliographic Instruction and Postmodern Pedagogy

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ABSTRACT

POSTMODERNIST DEBATES IN ACADEMIC CIRCLES provide expanded opportunities for making information studies an integrated part of the academic program. Past bibliographic instruction (BI) practices have been based on a reductionist scientific model that dislocates the focus of instruction from the documents of a discipline to a structure of disciplinary literature frequently imposed from without and often having little to do with the information content. Postmodern concepts provided by textual criticism and the sociology of knowledge can turn libraries into learning laboratories for studying information in the context of the academic discourses that create it. Postmodernist approaches allow students to compare, at one level, methods of information organization and, at a more basic level, how knowledge is claimed in a variety of scholarly disciplines. Rhetoricians, especially composition teachers with whom bibliographic instruction librarians have much in common, have already realized the importance of postmodernism as a strategy for teaching composition. Rhetorician Richard Lanham even maintains that elements of postmodernism applied to emerging information technology provide ways to reform the undergraduate curriculum.
INTRODUCTION

D’ya know the creed a
Jacque Derrida?
Der ain’t no reader.
Der ain’t no wrider
Ider

—Anonymous

This bit of wit might be the abstract of many responses to postmodernism—the projects of deconstruction, irrationalism, and other forms of the virulent "French disease" spraying through ink jets onto sacrificial trees around the country. Canonical outrages rumble across the academic landscape. Strong programs battle weak responses, agents unfix, texts destabilize, boundary disputes flourish. Of these academic wars going on in the texts we buy and the disciplines we support, librarians and campus information specialists might well ask Gertrude Stein's (1937) famous question: “Is there a there there” (p. 289)? From the paucity of references to postmodern anything in our professional literature, the answer would appear to be negative. A quick search through the 1982-1994 ERIC can link libr* and (deconstruct* or postmodern*) only seven times total. LISA finds eleven links. Despite the odds, however, this author maintains that postmodernism is worth consideration.

For one thing, as information managers, we should have front row seats at discussions that go to the heart of our profession as collectors, codifiers, and deliverers of information. In many ways, we seem to have settled on definitions of information that resemble a cargo manifest of hardware and artifacts. We take pride in volume counts and holdings but take the Nuremberg defense when asked how, except by shear weight of numbers, these tomes and tools function to support the disciplines for which they were brought into being. Postmodernists would like us to consider that there may be no knowledge, only knowledges, that our reference and circulating texts are curiously ambiguous as communicators of information, and that each text (document) is a knowledge claim that follows local rules made by social agents we call disciplines—the human factor.

For those involved in bibliographic instruction (BI), postmodernism implicitly invites us to revisit our concepts of information as we go about our instructional business. If all knowledge is local, should not our instructional focus be on those who create it rather than on the subsequent acts of others who publish, collect, and organize it? If we accept the reflexivity principle prescribed by postmodernists, should not we be looking at the preconceptions, values, and biases we and others have imposed during the classifying and organizing process (Hubbard, 1992)? This has already occurred to others on campus. Among composition instructors, for example, there has been movement toward reorienting student research from a top-down structured exercise to a bottom-up discovery experience. Rhetoric is being rehabilitated. Perhaps we have been looking through the wrong end of the telescope.
Finally, we should seek out as many perspectives as possible in the face of advancing technologies to help students interpret what authenticity, value, and use is to be made of the deluge of information raining down on us. On the Evergreen campus, as I suspect on many others, the question of whether or not to deal with electronic media, which I will shorthand as "The Net," has been supplanted by the more pressing question of how to deal with it. It is a question being asked, naturally, of the library—the self-proclaimed "heart of the university." A great deal of useful material has been compiled about what is out there and how to get to it; my issues of ALA and ACRL journals are filled with helpful surfing hints and addresses, not to mention some disquieting access and administrative tempests of the talk show variety. But questions and answers about the knowledge value and relevance of The Net are less easy to find in library literature. For example, what qualities of knowledge or information are transcendent in either codex or digital form, and how is this decided? The Net is now, and may well continue to be, an unorganized collection of knowledge or information. If what we have taught in the Industrial Book Age is the organization and structure of codex knowledge and all we teach about The Net is communications software, data manipulation, and liberal attitudes, the Information Age may be more threat than promise for our pedagogy if not our profession."

POSTMODERNISM

"Postmodernism" presents lexicological problems because of wide acceptance and local use by academics and professionals as well as by the popular culture. The definition that follows is reductionist to a degree and no doubt annoying to anyone versed in philosophical or epistemological niceties, but my interest here is on the pedagogical opportunities presented by postmodernism.2

Defining "postmodernism" first requires defining "modernism," to which it is a response. For present purposes, "modernism" (and the related term "structuralism") is a philosophical attitude that ripened in the twentieth century. It has intellectual roots in rationalism, positivism, and evolution, reaching back as far as Plato's ideal forms (idealism). It is given to speculation and theories of the grand universalizing kind, attempting to hand down laws that govern the natural and, increasingly in the nineteenth and twentieth centuries, social worlds. It implies order and orderly linear thinking and systematic approaches to problems and exposition. This in turn implies structure and hence structuralism. From the postmodernist perspective, modernism privileges science and the scientific method as its exemplar. Much like Plato, in defining knowledge, modernism tends to discount, marginalize, or dismiss individual or collective acts which, by their spontaneous nature, lack systematization. This extends to the arts in which, in order to be granted recognition, a work
must conform to rigid rules and sensibilities pronounced by the critics and priests of high culture. Modernism craves certainty and predictability. Keats would say it has no negative capabilities.

Postmodernism's tangled roots, along with those of poststructuralism, reach into the materialism of Epicurus, existentialism, hermeneutics (the theory of interpretations), phenomenology, and especially linguistics. While it is not immune to speculation, its gaze is most often to the past and present rather than to the unpredictable future. It avoids grand theories or "metanarratives" as Jean-François Lyotard (1984) calls them (p. xxiv). Like Tip O'Neill's politics, postmodernism maintains that all knowledge is local. It particularizes rather than generalizes, thus privileging social, cultural, political, and philosophical diversity. Its interest in marginal groups created by modernism is shared to some degree by the critical theory of the Frankfurt School and communication theory of Harold Innis. Since this attitude denies universal laws, postmodernists may find themselves labeled irremissible relativists by modernists. Particularizing gives postmodernism a pronounced interest in linguistics insofar as it studies acts of communication and the play of language—the "linguistic turn." In its literary and legal deconstructionist form, it challenges the ability of texts to connect readers with authorial intent. In architecture, it tosses off playful façades, inversions like the inside out Pompidou Center in Paris, and eclectic quotes from other buildings, periods, and styles. It challenges traditional aesthetic theories by turning the everyday and banal into art (e.g., works by Oldenburg and Warhol). In short, it defies the aura and doctrines of orderliness and certitude found in modernism by turning them on their heads and asserting the vagaries and diversities of human intervention. Keats might have been a postmodernist.

THOROUGHLY MODERN BIBLIOGRAPHIC INSTRUCTION

*Snow Crash*, one text being used in Evergreen's information course this year, is a witty cyberpunk sci-fi thriller heroed by the pixelesque Asian-African-American, Hiro Protagonist (Stephenson, 1993). The action takes place in the not-too-distant future when government has been franchised and privatized, and the only employment possibilities are music, movies, software programming, and pizza delivery. Given these uncomfortably imaginable possibilities, life is lived as little as possible in sentient reality, more so in virtual reality constructed in a Metaverse. As his source of information, Hiro is served by his librarian, the keeper of all wisdom stored in the universe. Tweedy, rumpled, aged to dusty maturity, the librarian is, "cheerful; he can move through the nearly infinite stacks of information in the Library with the agility of a spider dancing across a vast web of cross-references . . . the only thing he can't do is think" (p. 107).

The librarian is a piece of very expensive, user-friendly, retrieval software—a digitized Randtriever. If storage and retrieval are the only roles possible, what might this librarian's BI program look like? What would its learning objectives be?
Unfortunately, the answer to these questions may already be at hand in the form of that venerable campus institution, the Research Paper Assignment (RPA), in whose interest much BI is expended. According to one criticism: "Students generally view the research paper as informative in aim, not argumentative, much less analytical; as factual rather than interpretive, designed to show off knowledge of library skills and documentation procedures... as an exercise in information gathering, not a discovery" (Schwegler & Shamoon, 1982, pp. 817-24).

BI's contribution to these conditions is apparent: teaching information gathering is not teaching discovery. Some would maintain that libraries are primarily organizing activities complex enough to require some explanation in order to make them useful. In the instructional event, the emphasis falls on explaining organization (indexes, catalogs, bibliographies, etc.), implicitly assuming, it would seem, that figuring out our complex rules and organizing puzzles is somehow central to students' intellectual discovery of the world. That we assume the structure we have imposed on information is itself a topic of academic value outside our own discipline is implicitly a modernist argument that can be reduced to the premise that structure equals substance. There are obvious flaws in this thinking as struggles for librarians' faculty status attest. What composition reform faults (see below) is that finding information is only part of the lesson, and that the focus of our attention needs to be on educating about knowledge—why the documents in our collections figure in that inquiry and how they can challenge students. In pursuing how postmodernism can contribute to creating conditions of discovery for BI, it is necessary to make a few observations about the modernist/structuralist paradigm that has become imbedded in BI.

**Structural Bibliographic Instruction**

National attention to BI was ushered in by the Monteith College report in the mid-1960s (Knapp, 1966). By the 1970s and 1980s, one particular modernist model, taxonomy, brought scientism to BI methodology. This model maintained that, with the regularity of a conveyor belt, knowledge moved from field work, to the lab, to conferences, to journals, to the apotheosis of a text sitting on a library shelf. Diagrams suggested knowledge arranged in a hierarchical structure with reference works at the apex, primary works at the foundation, with a varied assortment of publication formats in between. This Newtonian building block paradigm maintained that the bibliographic structure was isomorphic with the reality. "The correlation between the structure of the literature in a discipline and the reference sources in that discipline can be illustrated by tracing the progress of a piece of research from the time of its inception to its appearance in specialized texts," as a leading BI proponent claimed (Frick, 1975, p. 13). Friedes's *Literature and Bibliography of the*
Social Sciences (1973) was perhaps the most extended example of this model. In it, Friedes proposed structural concepts that explained disciplines as reifications of their literature as molded by the science paradigm. Again, “the basic bibliographic structure mirrors the structure of scholarly literature,” she maintained (p. 257). The success of the model was so widely accepted, it became part of professional library education.

A study by Hopkins (1987) illustrates the extent to which this taxonomic model of disciplinary literature was promoted in library school curricula around the country to at least one generation of librarians. The article, which appeared in the library schools’ professional journal, begins by admonishing the profession that “to be considered professional[,] librarians would need to learn and understand something about the content of the various materials they... deal with” (p. 136). The author then proceeds to elaborate in a very detailed fashion about various formats of literature and how they can be schematized to the point of having students construct diagrams (p. 146), concluding that “in a structured approach, students should develop a clear understanding of how scientific/scholarly communication, the substantive component of literatures, and the reference/bibliographical component, are all part of one integral process” (p. 150). The obvious question is whether this conclusion really supports the author’s contention or whether “content” here is being confused with structure.

What this and similar articles firmly maintain is that the taxonomic model suggested by a reductionist conception of the scientific method provides a one-size-fits-all BI mold for all disciplines. This was clearly the assumption when the Social Sciences Citation Index came into libraries in the 1970s followed shortly thereafter by the Arts and Humanities Citation Index. These products assume that all disciplines do or should follow the example of scientists. At the same time, the taxonomic structural model is appealing as a BI model. Not only does it have the beauty of simplicity, but it also incorporates principles from the library’s own organizing activities such as establishing conceptual hierarchies and emphasizing characteristics that, rather than capturing the messiness of knowledge making, distinguish and deceptively order materials through subject cataloging and classification. Symbolically, much BI activity took place in the reference area looking at the superstructure organizing creates, while the actual knowledge-bearing documents rested undisturbed and unquestioned in distant stacks. We learned and taught about the organizing process. In the event, as one composition teacher suggests, we were teaching about ourselves and not about academic knowledges (McDonald, 1990). Moreover, by fixing knowledge-bearing documents in a hierarchical dimension, this method reinforced disciplinary boundaries and creates “fugitive” literatures of which those of a multicultural nature are only the most glaring example. It lends credibility to the Great Books concept by allowing reference works to speak as authorities about what constitutes “substantive literature” even if this is calculated by adding up
(with Eugene Garfield’s help and products) the frequency of citation without considering whether this sort of canonicity perpetuates in students the awe-inspired uncritical attitudes lamented by their instructors. Literature documented as “significant” in this manner achieves a level of Arnoldian privilege that discourages students from directly questioning its authority. In return, the method legitimates our organizing activities and products with a certain insouciant symbiosis.

**DISCOURSE ANALYSIS AND BIBLIOGRAPHIC INSTRUCTION**

The late Foucault (1972) has informed the postmodern attitude as much, if not more than, any contemporary thinker. A key interest in this French philosopher’s works is the diverse and subtle ways in which social power evolves and is exercised. In a widely read and cited work, *The Archaeology of Knowledge*, Foucault poses the questions that can be asked of any form of communication claiming authority:

[W]ho is speaking? Who, among the totality of speaking individuals, is accorded the right to use this sort of language (*langage*)? Who is qualified to do so? Who derives from it his own special quality, his prestige, and from whom, in return, does he receive if not the assurance, at least the presumption that what he says is true? What is the status of the individuals who—alone—have the right, sanctioned by law or tradition, juridically defined or spontaneously accepted, to proffer such discourse? (p. 50)

Obviously, this is a different concept of “content” than that of structural BI. If we spin a BI program out of it, Foucault’s method proposition might be: if information has its roots in human activity and its expression in human action, then questions of authority, and the discourse analysis embedded in them, are worth considering in what we teach about information. What is going on in the texts we collect? How do they create the knowledge that places the library at the center of the university? However, library literature seems to be ignoring, or studiously avoiding, these basic questions. For example, in a recent review of “Library Literacy,” the BI column of *RQ*, a twenty-five-year summary of the column could cite only two articles related to discourse studies (Arp, 1994).

The inattention to texts is an odd circumstance when we consider that our shelves are virtually groaning with works on the social aspects of knowledge. Woolgar’s (1988), *Science, the Very Idea*, which addresses both science and social sciences, is a good example, as are Latour and Woolgar’s *Laboratory Life*, McCloskey’s *The Rhetoric of Economics*, and Nelson, et al.’s *The Rhetoric of the Human Sciences*. Gross, in his *Rhetoric of Science*, appends a twenty-page list of them (pp. 221-42). Becher (1989) has made a career of writing delightful articles and a book, *Academic Tribes and Territories*, on the behaviors of knowledge communities. Lodge and others (*Small World*) have contributed satiric looks at our academic worlds. Together, they are a reminder that knowledge, like life, “is not an orderly
progression, self-contained like a musical scale or a quadratic equation” (p. 69), as Leonard Woolf (1970) observed. These are examples of humanistic tools we can give students to break into the disciplinary ivory towers.

One study used frequently in information courses at Evergreen is *Shaping Written Knowledge*, by rhetorician/writing instructor Bazerman (1988). The work is a collection of Bazerman’s published articles, one of which, “What Written Knowledge Does,” is especially useful for illustrating how a text can be analyzed by students (pp. 18-55). In the article, Bazerman dissects three illustrative articles taken from journals in literary studies, social sciences, and science, each by disciplinary heavyweights—i.e., Hartman, Merton, and the well-known duo of Watson and Crick of DNA fame. Bazerman uses these articles in a Sherlockian manner to compare how these authors go about constructing statements of knowledge that are recognizable and accepted by their disciplines. “In mediating reality, literature, audience, and self, each text seems to be making a different kind of move in a different kind of game” (p. 46). He concludes by pointing to these four components of composition as the defining elements in disciplinary knowledge:

Getting the words right is more than a fine tuning of grace and clarity; it is defining the entire enterprise. And getting the words right depends not just on the individual’s choice. The words are shaped by the discipline—in its communally developed linguistic resources and expectations; in its stylized identification and structuring of realities . . . in its literature; in its active procedures of reading, evaluating, and using texts; in its structured interaction between writer and reader. The words arise out of the activity, procedures, and relationships within the community. (p. 47)

A BI program predicated on the bottom-up approach suggested by Bazerman and others looks radically different from the top-down taxonomic model. It turns the focus of research to the truly primary documents of a discipline and de-emphasizes the possibly cognitively unrelated bibliographic web by which they are currently located or dislocated. Information curricula formed around such concepts as Bazerman’s rhetoric-based discourse analysis invite students to look critically at the claims of knowledge with which they will be barraged throughout their college careers and beyond. Indirectly, the same methods can give librarians a more critical reflexive stance toward our own armory of bibliographic creations. We destabilize our own references.

**Composition and Bibliographic Instruction**

Composition (writing/rhetoric) instructors and BI librarians have much in common, not only in instructional matters but in their emergence and status among their respective professional colleagues. Both
the Association for College and Research Libraries (ACRL) and the Mod-
ern Language Association (MLA) date from the latter part of the nine-
teenth century—1889 and 1883, respectively. However, despite their aca-
demic orientations, neither organization proved particularly attentive to
pedagogical concerns. According to Goggin (1994), from the very be-
inning of MLA, rhetoric and writing instruction were shunted aside in
favor of literary scholarship. As a result, MLA formally disbanded its
pedagogical section in 1903 to focus solely on high-culture concerns of
literary criticism, philological scholarship, and linguistic discipline (pp.
1-2). As a consequence, rhetoricians and composition teachers embarked
on establishing independent forums to meet their own needs. However,
no sooner was a series of associations and journals established to repre-
sent and communicate the interests and practices of composition teach-
ers, than these organizations and journals were invaded by theoreticians
seeking outlets for tenure-rewarding publications and status—the ascen-
dancy (and glamour) of theory over practice (pp. 14-17). Since 1955,
writing interests have been represented by the Conference on College
Composition and Communication (CCCC), far removed from their origin-
al homestead in MLA.

The bibliographic instruction movement—the pedagogical interests
within ALA and ACFX—shares some of the homeless aspects of composi-
tion. Those present at the 1976 Chicago ALA annual meeting may recall
the charged meeting of disappointed, even outraged, BI librarians trying
to gain legitimacy for pedagogical interests within ALA. With Mimi Dudley
as our leader, those gathered in that crowded hotel room plotted some-
thing like armed rebellion to gain reluctant recognition from the organi-
ization. LOEX, a semi-autonomous organization outside of ALA, in fact
developed as the real home of early BI. My belief is that, since library
literature is clearly management oriented, there is little place for either
theoretical speculations or pedagogical methodology in it.

The working alliance that developed between writing teachers and
librarians is suggested by McDonald in a paper documenting the history
of the RPA (1990). McDonald contends that it was librarians who were
instrumental in shaping the RPA earlier in this century by creating and
making available a variety of indexes and other bibliographic aids (p. 8).
Library information organization provided writing instructors with a read-
ymade structure on which to base the format for the RPA. Thus, librarians
figure as unindicted co-conspirators in the dubious achievements of the
RPA as a retailer of undigested facts. Echoing Schwegler and Shamoon
(1982), McDonald's criticism of the RPA is that fact-finding is not educa-
tion; it is a treasure hunt of sorts with rigid rules of conduct in which a
student is neither asked nor encouraged to question or analyze the facts
being assembled. Citing colleagues with similar concerns, he calls for
writing assignments which reward critical analysis by students, assignments
that allow students to become more than outside admirers of disciplinary edifices. They should be brought inside to see and learn firsthand the illusive and situational character of facts, and implicitly the social environments that bring them into being. McDonald's concern about the current state of the RPA transfers easily to BI.

McDonald looks to theories from Paulo Freire and like-minded reformers as solutions to the research paper problem. Referring to Freire, McDonald (1990) maintains that, by using postmodernist concepts, "[w]riting a research paper could involve more than merely gleaning information from sources but could be a study of the discursive practices of texts on a particular subject in which writers consciously situate their own text in the discourse of others." He concludes: "I believe that we can work out pedagogics informed by postmodernism that can transform, if not explode, the genre of the research paper to help students become better readers, researchers, and writers" (p. 15).

Rhetoric and Bibliographic Instruction

The Net promises to be the working model of postmodernism proposed by Jean-François Lyotard. Physical and textual dimensions of community are abolished; all knowledge is local. As Archilochus might wonder, will there be any all-knowing hedgehogs among the local-knowledge foxes? As a BI person, I wonder if our response to the invasion of our text-based domains by media will be only a replay of our past association with knowledge, merely substituting the word "media" for "text." The quantity of Net lists, management discussions, product reviews, and just plain wavy speculations on metatopias in library literature are not always encouraging. But the biggest concern is whether our shelves of texts teach us anything about the knowledge creation process that can be productively applied to the raucous electronic environment.

One answer worth considering comes from Richard Lanham (1993), yet another rhetorician/writing teacher. His book, The Electronic Word, addresses a wide-ranging interrelated list of academic concerns, among them: liberal arts curriculum reform; the "meaning" of electronic information; the dominance of the sciences on campuses; what is wrong with the E. D. Hirsch/William J. Bennett canon; why Plato is bad; and how to return values to the curriculum. Despite some repetitiveness, Lanham lays a lavish intellectual board, too lavish to pursue in its entirety in this brief article. There are, however, a number of points bearing on the present discussion.

Based on Eric Havelock's (1986) work on the transition from orality to literacy in ancient Greece, Lanham proposes that electronic media are fundamentally changing our experience of knowing and therefore our criteria for what constitutes knowledge. According to Lanham and Havelock, before the development of literacy, knowledge in ancient Greece was expressed orally using the five elements of classical rhetoric—invention, argument, arrangement, style, and delivery. Before Plato and the
shift to literacy, education consisted of mastering these five elements. Plato and the academy disallowed decoration [style] and emotion [delivery] as valid elements of knowledge, banishing them and their poetic licenses from the academy’s paideia. Plato’s abridged rhetoric was ideally suited to establishing abstract facts and truths, circumstances that privilege scientific, linear reasoning, and which accelerated dramatically with the Newtonian revolution, reaching an all pervasive apotheosis in modernism.

According to Lanham, the codex book has been an accomplice in establishing and maintaining the ascendancy of science and linear thinking in the curriculum. It is the icon of Platonic tyranny. By its very existence, the book represents irrefutable facts—aloof, unalterable, inhospitable to interaction with the user. The emphasis on “facts” implicit in the Platonic curse results in the Great Books of the Canon. These rely on the Canon as the ideal means for teaching students dumb respect for facts—a catechism of reverence—rather than providing them with the process by which to pose and solve problems themselves. Even the physical attributes of the codex book—beginning, middle, end—imply a misleading linear reality, a world with directional orientation and purpose. The complicity of libraries in this seems clear. Echoing McDonald, Lanham congratulates the deconstructionists (Derrida and others) who have destabilized not only the text but also the Platonic foundations on which it rests, just as chaos theory, according to him, has destabilized the scientific world.

For Lanham, Western industrialism has fostered a culture of objects (such as books) which has fed upon, and been fed by, Platonic linear thought. But information has no substance; attempting to objectify it as an industrial product is like trying to drink from a fire hose. In the face of these vagaries, electronic media returns knowledge to its classical balance (or perhaps imbalance), which turns out to be remarkably like the democracy of local knowledges described by Lyotard (1984) in The Postmodern Condition. The paideia turns from teaching objective facts to teaching effective interaction with facts based on a student’s individual experience. In a curriculum incorporating the electronic word of Lanham’s title (hypertexts, images, sounds), a student has the potential to alter, embellish, comment on, and criticize the subject of study, thereby returning the playful humanizing rhetorical elements of style and emotion to the educational endeavor. Effective use of information requires a student to engage in rhetorical individual negotiating processes; no two of them will produce the same results, but there are no wrong answers.

How can all five elements of classical rhetoric be reunited? Lanham proposes a bipolar model, maintaining that learning is both an unconscious and a self-conscious act. We have been taught, against our basic instincts, to accept the objective world of Platonic forms by unconsciously looking “through” texts as though they were windows on a higher reality beyond personal experience. Computers and the
electronic word allow—even encourage—manipulation of text, thus altering the privileged status of facts by forcing us to look consciously “at” the media as well as “through” it, a process Lanham calls “toggling.” Electronic information is heavily influenced by the arts and humanities—the emotional and the playful. Computers are rhetorical machines that invite students to manipulate text, images, and sounds, thereby participating in the creation of knowledge. On the one hand, students would continue to be taught to look “through” linear narratives [books] to the Platonic world of facts and truths. On the other, students learn the reflexive act of looking “at” how information is altered and acted upon by the medium which presents it. To illustrate the reunion of the lost tribes of rhetoric, Lanham points to twentieth-century art. He maintains that, since the Italian Futurists in 1909, modern art has been toggling between making statements about art (looking “at” it) by contradicting viewers’ expectations, while at the same time using art as a medium of communication to an aesthetic experience (looking “through” it). Every work answers the question: “What is art?” Using rhetorical analysis and the ahistoricism of postmodernism as one pole and the conventions and constructs of Platonically based disciplines as the other, we can begin to ask the same “What is . . . ” question of any discipline or subject.

What might a BI program based on Lanham’s ideas look like? For one thing, it would probably look critically at how the codex book functions as an icon of knowledge. This, after all, is the form of knowledge we as librarians deal with constantly. Has, for example, the physical composition of the book determined that the acceptable formula for fiction is beginning-middle-end? Does the book suggest a closed argument, a dispenser of information that will only answer questions posed by itself, resisting interrogation by any user?

Few of those riding in the posse of postmodernism and curriculum reform may be willing to jump over the bookless precipice to keep up with Lanham. However, his concept of “at” and “through” is an important model aimed at creating in students a self-consciousness about their own and others’ role in the information creation process, while at the same time looking through the media to disciplinary matters beyond. This, of course, returns us to the postmodernists’ perspective of inquiry through discourse analysis, the sociology of knowledge, deconstruction, and other manifestations of postmodernism. Knowing knowledge requires knowing the how and why of its creation and uses as well as its expression and claims in presentation. Its organization should not obscure these basics.

**Conclusions**

The above discussion is a prospectus for an experimental information course that was offered at Evergreen State College this spring. With students, we read and held seminars on Havelock, Lanham, Stephenson, and Bazerman, among others. Against this backdrop of knowledge cre-
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ation and issues of information policy, students learned Internet basics, graphic imaging (visual information), subject bibliography, and wrote literature reviews. The course was in large part an extension of Evergreen's BI activities in recent years aimed at integrating information study as part of other college programs. Its purpose was to test the model proposed earlier. At the same time, its aims were also humanistic, for which it is again worth quoting Leonard Woolf (1970) who, in describing his approach to autobiography, captures a perspective postmodernist BI might agree with:

Life is not an orderly progression, self-contained like a musical scale or a quadratic equation. For the autobiographer to force his life and his memories of it into a strictly chronological straight line is to distort its shape and fake and falsify his memories. If one is to try to record one's life truthfully, one must aim at getting into the record of it something of the disorderly discontinuity which makes it so absurd, unpredictable, bearable. (p. 69)

NOTES
1 For an excoriation of librarianship on this theme, see Michael A. Harris and Stan A. Hannah. (1993). Into the future; the foundations of library and information services in the post-industrial era. Norwood, NJ: Ablex.
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