This paper describes the North Carolina State University (NCSU) Libraries' experiences in developing distance education services as an example of how to meet the challenge of providing comprehensive, customized information and instructional support for both on- and off-campus learners. The first section provides historical background on distance education at NCSU. The entrance of distance learning into the mainstream is discussed in the second section, including developments in technology, and new relationships and partnerships among faculty, administrators, libraries, technical staff, and students. The third section describes library services for distance learning, including specific initiatives at NCSU, the principle of equity of services for local and distant students, and recognition that technology cannot be substituted entirely for human interaction. Four major categories of library services for distance learning are identified: instructional services; faculty communication and liaison; access to information resources; and reference and consultation services. It is concluded that the most effective and sustainable distance learning initiatives are guided by a vision that combines rapid adoption of innovative technologies with sound pedagogical principles. (Contains 14 references.)

(MES)
As we approach the year 2000, dramatic changes in technology, communications, and access to information resources are opening new opportunities for lifelong learning in virtually all academic disciplines and professional fields. Currently, the demand for distance education and lifelong learning is increasing more quickly than are most universities' physical facilities to accommodate additional students. The North Carolina State University Libraries' experiences in developing distance education services offer an example of how to meet the challenge of providing comprehensive, customized information and instructional support for both on- and off-campus learners.

Historical Background

One of the founding principles of North Carolina State University (NC State) is the belief that education should be offered to learners beyond the walls and boundaries of the campus. Long recognized as a leader in science, engineering, and technology, NC State has a rich history in lifelong and distance learning that dates back to the early 1900s, when it was known as the North Carolina State College of Agriculture and Mechanic Arts. The Department of Agricultural Extension was established in 1909 to "bridge the gap between the College and the rural citizens" of the state. (1) By the mid-1920s, the university was offering correspondence courses and off-campus credit courses all across the state. Substantial course selections were offered in a wide range of disciplines. NC State was the only college in the world that offered
correspondence courses in textiles. Like correspondence courses, off-campus credit courses have been offered by the university for over seven decades.

By the 1970s, televised instruction using videocassette technology played a major role in the delivery of continuing education to the employees of North Carolina businesses and industries, especially those in textiles and engineering. The College of Engineering established a program called Video-Based Engineering Education (VBEE) that attracted high enrollment, and this program later expanded its delivery mechanisms to include satellite transmission and Internet-based interactive video.

In the late 1980s, the College of Humanities and Social Sciences began offering courses via cable television. Building on the success of this program, in 1990 the university established the Office of Instructional Telecommunications (OIT). OIT collaborated with faculty across the university to develop and offer courses in a wide range of subjects and a variety of delivery formats.

However, most distance education courses offered prior to 1998 were funded and administered separately from the main, on-campus curriculum. Few degree programs were available in their entirety to off-campus students. There were separate processes for student services and minimal structures in place to enable or encourage the involvement of librarians and library resources with distance students and faculty. In this regard, NC State was not unique. A 1995 needs assessment survey of distance learners by the University of Minnesota Libraries revealed that

Both students and faculty tend to avoid circumstances that require the use of library resources. The most disturbing findings of the study show that most distance learners planned for limited access to library resources and services (63%); most faculty expect their students will have less access to library resources than if they were taking an on-campus course (76%); [and] some faculty forego specific course assignments because of a perceived lack of access to library resources (20%)....

Received were written comments from distance learners, including these:

"One of the reasons I chose this course was because it did not require the use of a library."... (2)

Yet this situation was about to change. In that same year, 1995, a task force report entitled, "Reaching the Last Mile: Distance Education at North Carolina State University" asserted that

many distance education practitioners are riding the wave of new information technologies that are transforming the ways knowledge is collected, stored, assimilated, processed and, most significantly for higher education, the manners in which knowledge is exchanged and distributed worldwide. For the first time in its history, distance education is in the forefront of educational innovation. (3)

This report recommended that "it would be constructive for the library to designate a liaison for distance education who would become familiar with the special circumstances and problems of off-campus students and who could develop systems in support of these students."(4) Today, this vision is coming true in libraries and institutions across the U.S., and the NCSU Libraries is ready to emerge as a leader among them.

Distance Learning Enters the Mainstream

Developments in technology over the past five to six years, notably the Internet and World Wide Web, have expanded the range of opportunities for universities to reach distance learners and to offer increasingly interactive learning experiences. At the same time, it is widely observed that demand from the lifelong learning "market" for education and information is
growing dramatically. (5) The global Information Age economy and its competitive work environment, along with demographic factors, are driving these trends, and higher education must respond. Institutions will need to demonstrate that the distance education experiences that they provide match the competencies needed in the workplace, and students' critical thinking and information skills will be among the most critical attributes. (6)

At NC State, change has occurred in stages and has fostered new relationships and partnerships among faculty, administrators, librarians, technical staff, and students. From 1994-96, the "Student-Directed Information-Rich Undergraduate Education Project" explored how instructors and librarians could "set the stage" for learning experiences using networked information resources to stimulate student interest and classroom-based group activities facilitated by technology. In the summer of 1997, an initiative known as "Project 25" provided funding for a group of 25 "early adopter" faculty members to delve into Web-based course development and delivery. One goal of the project was to discover some of the benefits and challenges of using the Web as a primary medium for teaching and learning. Another goal was to have 25 "online courses" ready to deliver by Fall 1997. Project 25 provided an impetus for organizing campus-wide support for educational technology activities. A Learning Technologies Service (LTS) was established, with a staff comprised of computing specialists and librarians, offering expertise in instructional design, programming, graphics, and the integration of information into instruction. The Libraries provided space for the LTS within the Learning and Research Center for the Digital Age (LRCDA), a state-of-the-art collection of faculty support endeavors located on the second floor of the main library.

A recent report by the Computer Science and Telecommunications Board of the National Research Council and others describes the process of Being Fluent with Information Technology, which is seen as more encompassing than information or computer "literacy". Developing fluency is a lifelong learning process that requires people to develop a deep understanding of technology for interacting with information, communicating, and problem solving, and to continually build upon that knowledge. (7) Project 25 provided a unique opportunity for all of the participants involved to examine, test, and develop their fluency, as librarians and computing specialists collaborated to develop workshops enabling faculty members and graduate student assistants to build new technical skills and to become aware of the wealth of information resources available to be integrated with their courses. In addition, a Scholarly Communication Librarian who had recently joined the LRCDA provided workshops and consulting on copyright and intellectual property issues as they apply to online and distance education. Another element of the LRCDA is the Faculty Center for Teaching Learning, which coordinated workshops on "Linking Technology with Pedagogy."

As Hannelore Rader observed at the IFLA General Conference in 1998, "there is pressure on faculty to increase their productivity and to change instructional strategies. Such demands for major revamping of academe will be difficult and will also take time. It can be accomplished if instructional teams are utilized... to include representatives from the faculty, technology, librarians, and pedagogy." (8) Rader goes on to suggest that "librarians are in a unique position to become partners with faculty in curriculum reform and achieving resource-based learning for students," and "to be successful, librarians need to be alert, creative, and informed about what is happening on their university campus." (9) What is happening is that the university curriculum is being transformed to incorporate a wealth of options for "flexible-access" and "time- and location- independent" learning.

In late 1998, after the success of Project 25 and other similar initiatives, NC State and the 15 other state universities received a substantial legislative appropriation for "degree-related courses provided away from the campus sites of the constituent institutions." (10) The legislature also stated that distance education courses should be equivalent in quality to those offered on campus. These funds and resources are bringing about the integration of distance learning into the mainstream instructional strategy of the university. Full degree programs in disciplines of unique strength are being planned and developed to meet the needs of off-campus students, and student support services are being enhanced as well.
As noted recently by librarians at Johns Hopkins University, "All of these policy and planning issues may have a direct impact on the ability of universities and colleges to cope coherently with the deployment of distance education.... Clearly, libraries must promote and be part of rigorous planning and development efforts." (11) At NC State, library services and resources are viewed as an integral part of the overall instructional strategy, and librarians have served on many key campus planning committees charged with envisioning the future of distance learning in light of enrollment projections, student services requirements, and faculty development and support.

Library Services for Distance Learning

While universities at large have been extending their capabilities to offer flexible, interactive instruction to new and diverse communities of learners, libraries have been building a strong foundation of resources, technologies, and services to support and add value to that instruction. Librarians have much to contribute to lifelong learning in today's electronic environment. For instance, many of the initiatives developed by the NCSU Libraries in the past several years that have direct applicability to full-fledged distance education services:

- creation of the Digital Library Initiatives Department, a unit focusing on research and development of electronic tools and resources;
- development of a Web-accessible, self-paced tutorial, Library Online Basic Instruction (LOBO), for teaching research skills to incoming undergraduates;
- implementation of an electronic reserve system;
- addition of a Librarian for Spatial and Numeric Data Services to offer support for Geographic Information Systems (GIS) and other data-intensive applications;
- design of a user-customized Web "portal," MyLibrary@NC State;
- 24-hour reference assistance, in person, by telephone, or via electronic mail;
- expansion of the online database collection and availability of full-text electronic books and journals in all subject areas; and
- access to networked resources from off-campus locations through a user authentication system.

In addition, the Libraries contributed significantly to the planning and implementation of the NCLIVE (North Carolina Libraries for Virtual Education) system in which university, community college, and public libraries across North Carolina serve as gateways to a shared collection of online information resources, including encyclopedias, indexes, and full-text sources. See the Libraries' Web site for further details on any of these initiatives. (12)

The principle of equity of services for local and distant students is prominent in the requirements of legislative, accrediting, and review agencies, as well as in the professional library literature. Fortunately, services that meet and anticipate the needs of on-campus students are likely to be useful to distance learners, and those developed specifically to be time- and location- independent will also benefit on-campus students. Many librarians and educators believe that the distinctions between "regular" and distance students will diminish over time. For the immediate future, however, in order to provide focused leadership for determining user needs and shaping responsive policies and procedures, the NCSU Libraries has established several staff positions dedicated to developing comprehensive services for distance learners. These services will evolve in concert with other major library functions, with the ultimate goal of "integration into the mainstream" consonant with the university vision. The positions include the Director of Distance Education Services, a reference librarian with liaison and outreach responsibilities, a collections/resource specialist, and an information technology specialist.

Another fundamental principle guiding the Libraries' efforts is the recognition that technology or even content per se cannot and should not be substituted entirely for human interaction in the teaching, learning, and information seeking processes. As we make available increasingly
vast and complex electronic collections, we must convey to both faculty and students that seeking person-to-person guidance remains an option, and that librarians are available to respond promptly, perhaps even in real time. Fortunately, distance learners are becoming accustomed to communicating with their instructors via electronic mail and other technologies. They should be aware that contact with a librarian, too, is possible through the means most convenient for them, whether via telephone, fax, electronic mail, videoconference, real-time chat, cooperative agreement with local libraries, or periodic travel by the librarian to geographically dispersed sites when possible. Promotional materials and online forms and interfaces that present distance education services should include not just a Web address but as many alternative means for making contact as the library is able to provide.

Numerous examples exist of individual library Web sites listing specific support services for distance learners, and these sites allow librarians to consider the approaches and successes of other institutions in formulating their plans and policies. One particularly useful compilation of both literature and library links is a page entitled, "Library Support for Distance Learning," by Bernie Sloan. (13) A review of the current landscape indicates that library services for distance learning can be organized into four major categories:

- **Instructional Services**: training for both students and faculty on educational technologies, basic and subject-specific research skills, database searching techniques, etc. Self-paced guides and tutorials, both in paper format and online.
- **Faculty Communication and Liaison**: ongoing communication and marketing; distance education liaison can connect faculty with subject specialists to foster the integration of library information into course materials; librarians can seek more in-depth partnerships for certain courses. Faculty awareness and involvement are critical, since faculty are a channel of communication to students.
- **Access to Information Resources**: ensuring that the needs of distance learners are met in the selection of resources and modes of access; providing rapid delivery of both print and electronic materials on demand; use of electronic reserve.
- **Reference and Consultation Services**: maintaining a variety of communication modes and extended "office hours"; exploring new technologies for interactivity; seeking cooperative agreements with library partners located near the students.

The NCSU Libraries has developed a Web site and suite of services for lifelong and distance learners that incorporates all of these activities and is flexible to allow for ongoing evolution. (14) Off-campus learning programs and flexible-access courses will continue to expand and become integrated into the regular instructional practice of the university, serving a diverse student population with complex needs for knowledge and skills, unique constraints of workplace and personal circumstances, and varying fluency with and access to technology. In this dynamic milieu, the NCSU Libraries is committed to providing a full range of high-quality, user-oriented information resources and services that support all learning styles and instructional models.

**Conclusion**

The most effective and sustainable distance learning initiatives are guided by a vision that combines rapid adoption of innovative technologies with sound pedagogical principles. The NCSU Libraries provides an example of how to become a partner and leader in university support for distance and lifelong learners, seeking to enhance the learning experience and to facilitate interaction among students, instructors, librarians, course content, and information resources. Librarians can seize current and emerging opportunities to design creative distance learning services, not only to share knowledge but to spark enlightenment.

**References**

1. David A. Lockmiller, History of the North Carolina State College of Agriculture and

2. Reaching the Last Mile: Distance Education at North Carolina State University. Raleigh, North Carolina: North Carolina State University, June 1995, p. 5.


4. Reaching the Last Mile, p. 23.


9. Rader, p. 3.

10. 1998 North Carolina Session Laws, Ch. 212, Sec. 11.7.


14. NCSU Libraries Distance Education Services, see http://www.lib.ncsu.edu/risd/distance/.

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