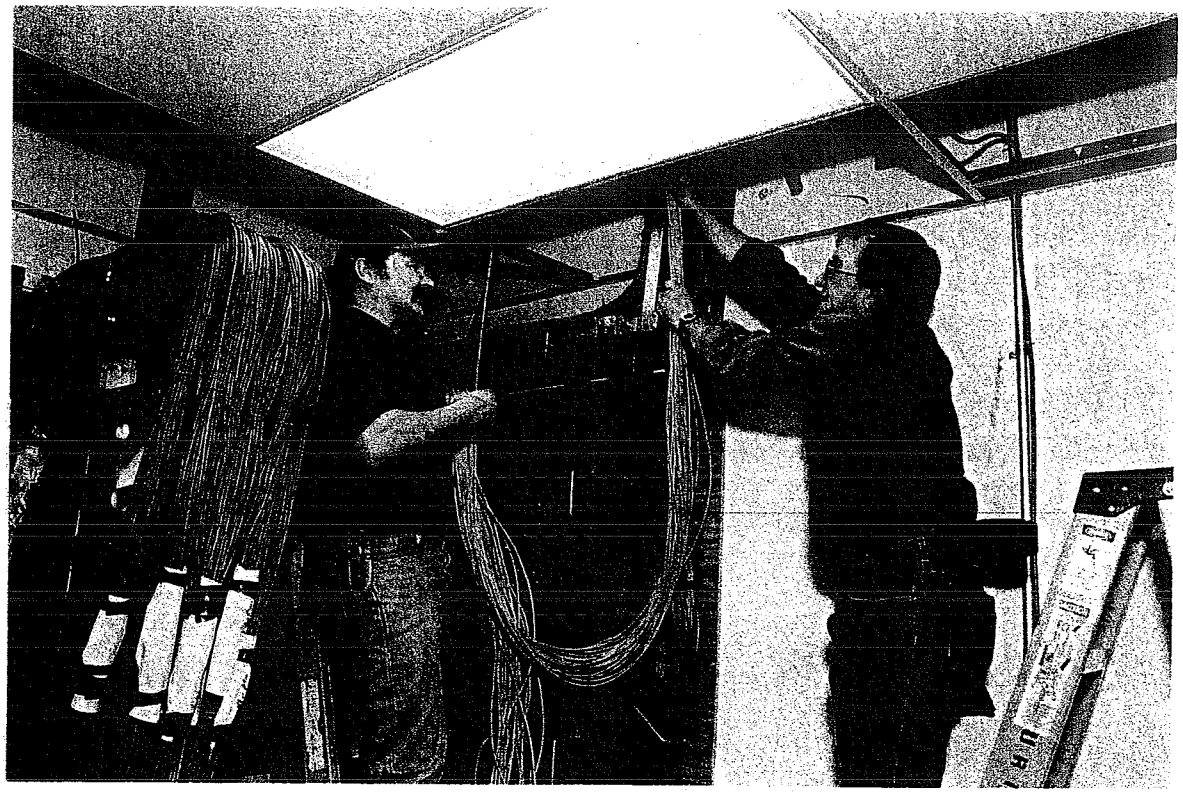
Higher Education Technology Initiative

Final Report

Rhode Island Office of Higher Education
Division of Finance and Management



February 2001

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Cover Photograph by Nora Lewis: Cabling technicians working on cabling project at Kelly Hall, URI.

HIGHER EDUCATION TECHNOLOGY INITIATIVE
FINAL REPORT

Executive Summary

We have seen a flurry of activity over the past four years as cabling, network electronics, software and computers have been upgraded to state-of-the-art technologies at the University of Rhode Island, Rhode Island College and the Community College of Rhode Island. To date, virtually all projects have been completed as scheduled and within budget.

In the current year, the initiative continues to focus primarily on improvements to infrastructure. Some new projects such as the implementation of *PeopleSoft* administrative software have also been initiated. These new systems are already in operation at Rhode Island College and steps have been taken to begin their implementation at the University with the purchase of a new state-of-the-art equipment and *Oracle* database software. The system will also be used to implement new enterprise e-mail and help desk applications.

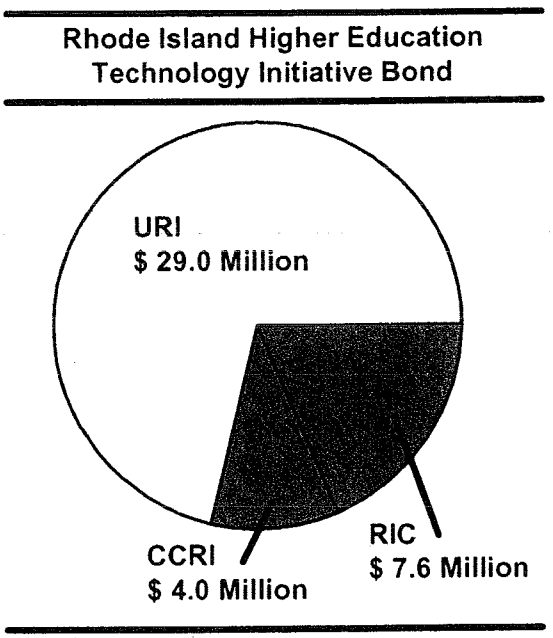
At the College, upgrades to networking equipment have taken place, significantly increasing the speed at which data is transferred over the network. Also, the College has just completed the installation of the necessary cabling that connects all buildings on the main campus and some of those located on the new East Campus. In addition to increasing the speed at which data is transferred over the network, the new cabling is being used to support the expansion of the College's campus-wide telephone system.

The Community College, with the assistance of AV Associates, has begun the development of plans for a sophisticated distance-learning classroom on the Lincoln Campus. Implementation is expected to be completed this spring. The Community College purchased and installed *PictureTel* equipment to allow video transmission of meetings between various groups across the institutions' various campuses. Currently the equipment is being used to teach selected chemistry courses on two campuses using one instructor. An interdepartmental group will provide training and assist with the planning of the new facility.

With support of the Legislative and Executive Branches, the higher education technology initiative continues to build the technological infrastructure necessary for new and innovative methods of teaching and learning. The accomplishments described in this report highlight the benefits that this initiative has provided to students at all three institutions within Rhode Island's system of public higher education.

Background and Introduction

In 1995, a special external committee of the Board of Governors reviewed the status of telecommunications in the Rhode Island system of public higher education. The Committee determined that it was critical to upgrade the technology infrastructure at all three institutions[1] since the schools were not equipped to offer students, faculty and staff the array of computing and networking resources required for the new millennium. Based on these facts, the Rhode Island Board of Governors proceeded to recommend that significant additional funding be secured to address these deficiencies.



In 1996, the Rhode Island Legislature acknowledged the findings of the Board of Governors and endorsed a $40.6 million technology initiative for the system of public higher education. Following legislative approval, the technology initiative was presented to Rhode Island voters as a state bond referendum and was approved. That bond issuance provided $40.6 million over five years with $29.0 million for URI, $7.6 million for RIC and $4.0 million for CCRI. The Higher Education Technology Initiative is among the most ambitious projects ever undertaken by the Rhode Island public system of higher education. "New technology per se is not a revolution – the revolution is the difference that technology makes in how we organize,

1 *Telecommunications In Rhode Island Public Higher Education*, A report from the External Committee on Telecommunications and Higher Education to the Rhode Island Board of Governors for Higher Education, March 15, 1995

structure, and empower our lives."[2] Moreover, the initiative assists the role of the Rhode Island system of public higher education in providing continued service to the state through excellence in teaching, learning, research, and service.

Key Projects and Current Status

Funding from the technology initiative is being used to build a state-of-the-art infrastructure consisting of cabling, wires, electronics, software, and computers. Much of this new infrastructure is not readily visible – being buried underground or located in walls, ceilings, and floors of numerous buildings on the eight campuses of our system. Upon completion of the initiative in 2003, 114 buildings throughout the system will be cabled with more than 13,000 information outlets, which will be available for use, by students, faculty and staff. The infrastructure is designed to accommodate emerging technologies and applications such as Internet 2, new instructional technologies, and distance learning applications.

I. Network Projects

During the past four years several cabling projects have been the primary focus of the technology initiative. Campus-wide cabling has been completed on all three CCRI campuses. Approximately 80 of the Community College's computing labs are cabled and connected to the campus network, which includes the *Cisco Network Academy*. The *Cisco Network Academy* continues to be a tremendous success, providing state-of-the-art training to students in the high-wage/high-demand career of network technician. In addition, with the use of funds from the technology initiative CCRI has made significant enhancements to its existing

Tech. Facts – RIC Cabling Projects

Fogarty + Four Project:
- *23 miles of cable*
- *5 buildings connected*
- *275 wall plates providing voice, video and data*

Phase II Project:
- 85 miles of cable
- 7 buildings connected
- 1,000 wall plates providing voice, video and data

East Campus Building 1 & 6 Project:
- *3.4 miles of cable*
- *2 buildings connected*
- *40 wall plates providing voice, video and data*

Higher Education to the Rhode Island Board of Governors for Higher Education, March 15, 1995

[2] HEIRA (1992), Gregorian, V. et al., Background Paper for the Higher Education Information Resources Alliance Executive Strategies Report #1, *What Presidents Need To Know About The Integration of Information Technologies on Campus*, September, 1992.

voice mail and call accounting systems.

Tech Facts – Housing and Residential Life Project

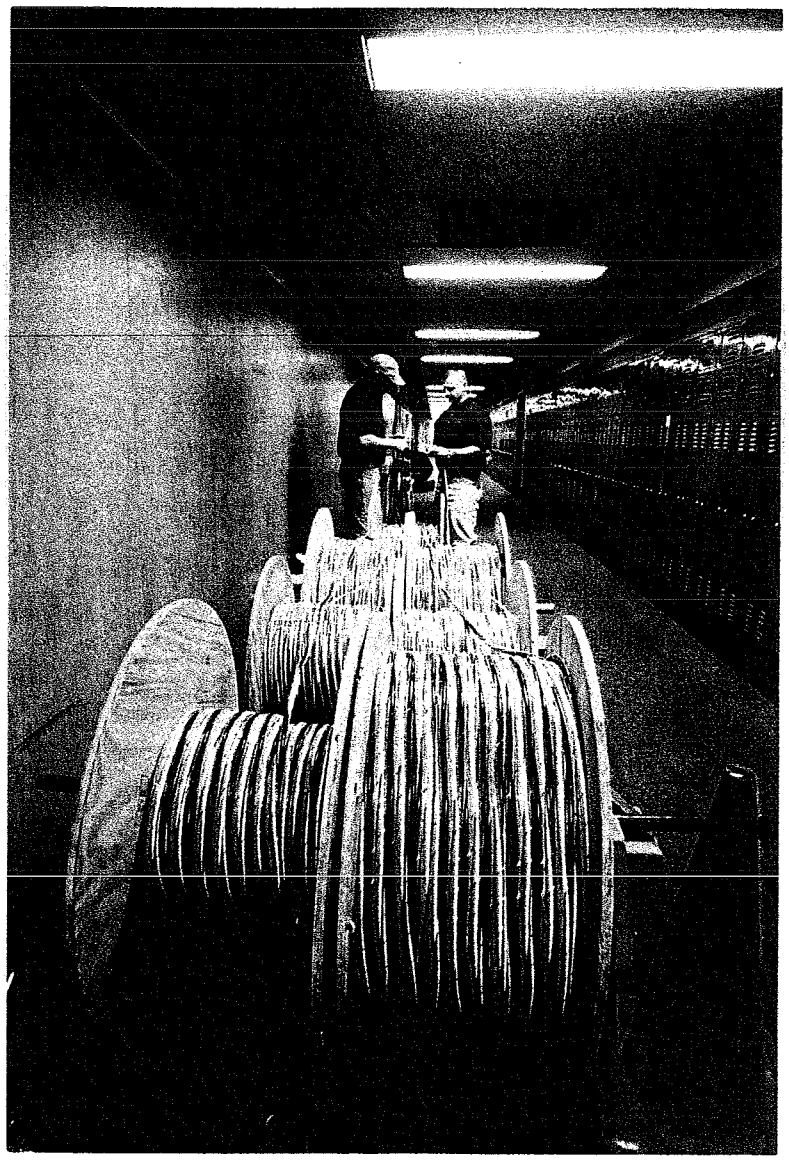
URI HRL Cabling Among Buildings:

- 230 miles of fiber cable strands
- 20 buildings connected
- Extensive upgrades of telephone cable
- 4,000 ft of new trenching
- 6 miles of new conduit

URI HRL Cabling Within Buildings:

- 20 buildings
- 2,000 rooms
- 2,189 wall plates providing voice, video and data
- 332 miles of cable

Network projects at Rhode Island College have resulted in significant improvements to voice, data, and video cabling, including the completion of cabling to five residence halls which has provided 908 network outlets. The College has also installed new high-speed *Cisco* switching and routing equipment and a new dial-up access server to provide faculty with easy access to the RIC network. Upgrades to the switching and routing equipment for the network also have taken place, significantly increasing the speed at which data is transferred over the network. In addition, the College has just finished installing the necessary cabling to connect all buildings on the main campus and some of those located on the East Campus. As well as increasing the speed data is transferred over the network, the new cabling is being used to support the expansion of the telephone system.



DCI Data Communications Inc., technicians installing new cable at RIC
Photo by Gordon Rowley.

At the University, cabling of the residence halls was given top priority in 1997. Approximately $1.5 million was expended to cable more than 2,000 dormitory rooms in 20 residence halls at URI. The URI Housing and Residential Life (HRL) cabling project provided 2,189

information outlets that facilitate voice, video and data to more than 4,000 students living in the residence halls. Additionally, URI in-house cabling teams have completed wiring of five academic and administrative buildings. In 1998 the University continued upgrades to the cabling and network equipment in University academic and administrative buildings. This effort included expansion of in-house cabling staff, facilities, tools and processes to facilitate a more cost effective means of conducting major building cabling projects. (In fact, estimates indicate that URI will save approximately 50% of the cost associated with this project if an outside vendor were used to complete the same projects.) The URI cabling team networked thirty buildings in 1999, which provided access to 99% of the Kingston campus' constituents. In 2000, the next phase of the project involved upgrades to older Ethernet cable technology that would not meet the growing bandwidth needs to users. As of December 2000, approximately 80 buildings have been upgraded to switched 10/100 Mbps Ethernet. Networking and Telecommunications Services (NETS) will continue to upgrade the 40 remaining buildings in 2001 and 2002. In addition, NETS has plans to start some pilot projects in 2001 using wireless technology. This equipment will complement, not replace, the core network that has been installed as part of the technology initiative. It is anticipated that the mobility provided by wireless technology will ultimately generate great opportunities and innovative uses for the University communications infrastructure.

Network-backbone cabling at the University received significant upgrades and extensions, including installation of Asynchronous Transfer Mode (ATM) network electronics at its core. Phase 2 of the cabling expansion project extended the fiber optic backbone and phone cabling to 54 additional buildings at the Kingston campus in 1999. The next inter-building cabling projects will connect 27 buildings on the Narragansett Bay Campus with fiber and telephone lines (Phase 3) and complete connections to buildings on the periphery of the Kingston Campus. Design and specifications for the Phase 3 inter-building cable project have been completed and a vendor has been awarded the contract with work scheduled to begin in early 2001. The project will include upgrades and extensions of underground conduit pathways to eliminate overhead lines and make the network more reliable and secure. Phase 4, which will begin shortly, involves connecting buildings on the periphery of the Kingston Campus to the high-speed ATM backbone network.

Major developments also included the creation of a regional non-profit networking consortium:

OSHEAN (the Ocean State Higher education, Economic development and Administrative Network). OSHEAN is a unique non-profit organization that is the only organization within the State to offer a hybrid combination of Internet 1 and Internet 2 access to institutions of higher education. Internet 2 is a key component in supporting URI's role as a leading research institution; investment in the campus network infrastructure through bond funding is one element that has helped facilitate access to Internet 2 by the University's research community. The OSHEAN network includes Brown University, URI, and RINet as founding members. Several other institutions have joined OSHEAN, including CCRI, RIC, Johnson and Wales, RISD, OLIS, and the Department of Administration. Wide Area Networking capabilities within higher education will continue to be enhanced by OSHEAN and non-research institutions may soon be eligible to use Internet 2 through OSHEAN sponsorship.

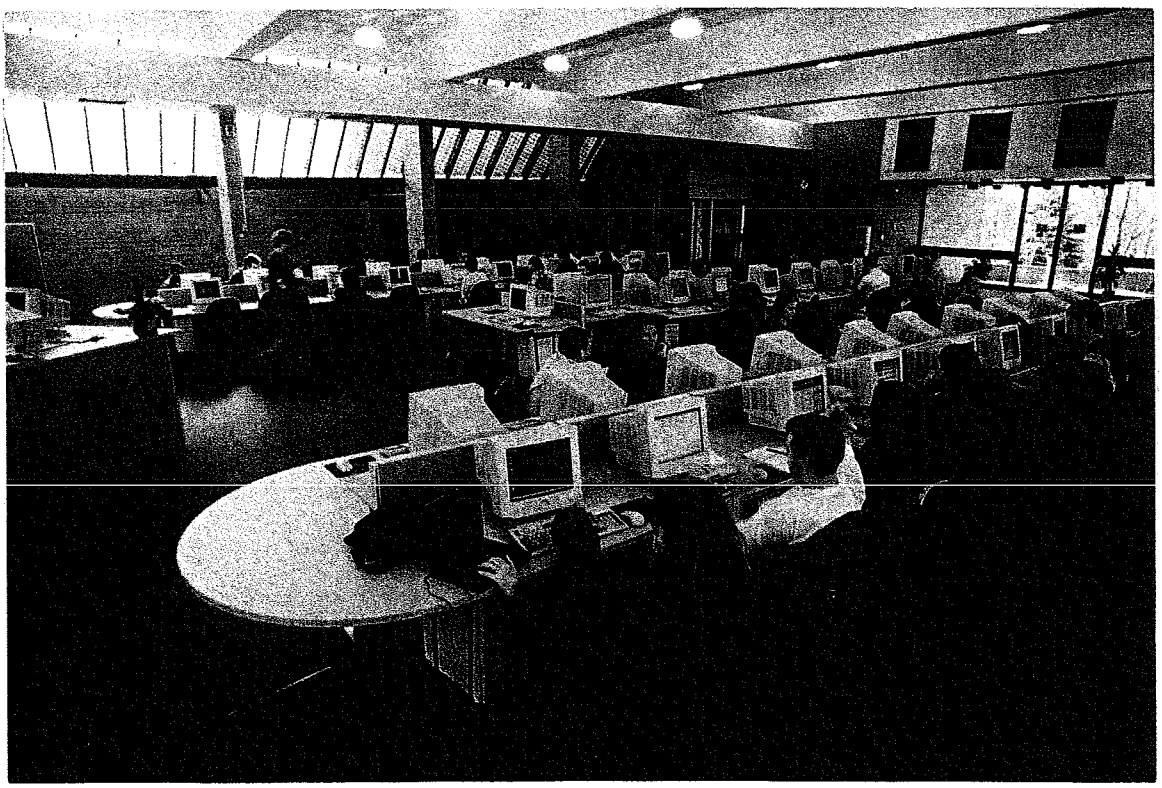
II. Computing and Student Lab Projects

Aside from the significant networking projects, students have benefited from a significant increase in the availability of desktop computers for general use. CCRI continues to expand and upgrade its substantial base of computers using funding outside the technology initiative.

Tech. Facts *– RIC Horace Mann Technology Center*

Open Access Desktop Computing:

- 51 new Dell Pentium II PCs for Students
- 6 new Macintosh Computers for Students
- 6 new high-end multimedia workstations for faculty
- 7 new Dell PCs for Information Technology professionals



RIC Students at the Technology Center at RIC.
Photo by Gordon Rowley.

Computers available to students include 220 found in public labs and over 475 in discipline specific mini-labs and classrooms. Approximately 250 new computers were purchased and installed in 2000 with approximately 200 new machines to be installed this spring. In 1997, a new state-of-the art Technology Center at RIC helped to augment the number of desktop systems available to RIC students by 50 percent. This deployment of new PCs and *Macintosh* systems has resulted in a doubling of desktop processing capacity across the RIC campus. RIC has continued the deployment of new PCs by installing 184 new *Dell* PCs, 77 networked laser printers, and 55 *Macintosh* systems in 1998 for faculty, staff and students. The College also purchased an additional 129 PCs that were installed during the 1999 summer session and 100 more over the past year. In 1999, 105 new PCs were purchased for the *PeopleSoft* implementation and over 75 of the older systems were upgraded this past year. *Macintosh* computers were upgraded in 1999 and a system was put in place to ensure that the *Macintosh* users at RIC have adequate professional support.

Major developments in desktop computing at URI include the procurement and installation of computers and peripherals for state-of-the-art student-computing laboratories in the main library (110 PCs), the Memorial Union (70 PCs) and the new multicultural center at the Kingston campus. Smaller labs in Chafee Hall and the Fine Arts Building have also been equipped with new PCs, *Media 100* digital video editing equipment, and music keyboards for enhanced music instruction.

In 1998, the Chafee and Quinn Hall Labs each received 25 new *Macintosh G3* computers. In 1999 the University upgraded several systems available to students; various *Dell* systems were installed to assist visually impaired, blind, and learning disabled computer users. The Technical and Operational Services (TOPS) unit at the University continues to provide technical support for servers, peripheral devices, applications, LANs, and operations at the University. In 1998, TOPS professionals installed several new servers and a rich array of state-of-the-art applications that greatly improve Internet, Web, and e-mail services available to URI users, users on the Higher Education Network and the Rhode Island Network for Educational Technology. During 1999, TOPS tripled disk storage for the electronic mail system and installed a new high-speed Digital Linear Tape system for backing up system data. This additional memory and backup capability has become necessary to support increased e-mail volume, message size and the quantity of messages saved on the server. In 2000, TOPS

and MIS received delivery of a new *IBM* server and *EMC* disk storage array ($850,000) that will be used to run various enterprise applications including e-mail services, help desk applications, *PeopleSoft,* and various *Oracle* Database applications. The new central server and disk array are being configured and are expected to be running in 2001.

URI continues to expand and upgrade its substantial base of computers. In 2000, the student computing facilities in the library and Chafee Hall were upgraded with Dell 733 MHz desktop systems. The Fine Arts computing facility has been upgraded with *Macintosh G4* systems. The Library and Memorial Union student computing facilities received new *Macintosh G4s* as well as new printers and scanners for student use. *PC Tabs,* a desktop computer security and alarm system was implemented and application software has been upgraded throughout campus computing facilities.

Tech Facts *- URI Instructional Technology Center*

1998-99 Early Enhancements at CCE:

- 12 new Macintosh 9600 Power Macs
- 8 new Multimedia Dell Pentium II PCs
- A new Apple Color LaserWriter printer
- New digital cameras
- A new digital scanner
- Media 100 digital video editing equipment

1998-99 Early Enhancements at Kingston:

- 10 new Macintosh 9600 Power Macs
- 6 new Multimedia Dell Pentium II PCs
- A new digital camera
- Media 100 digital video editing equipment

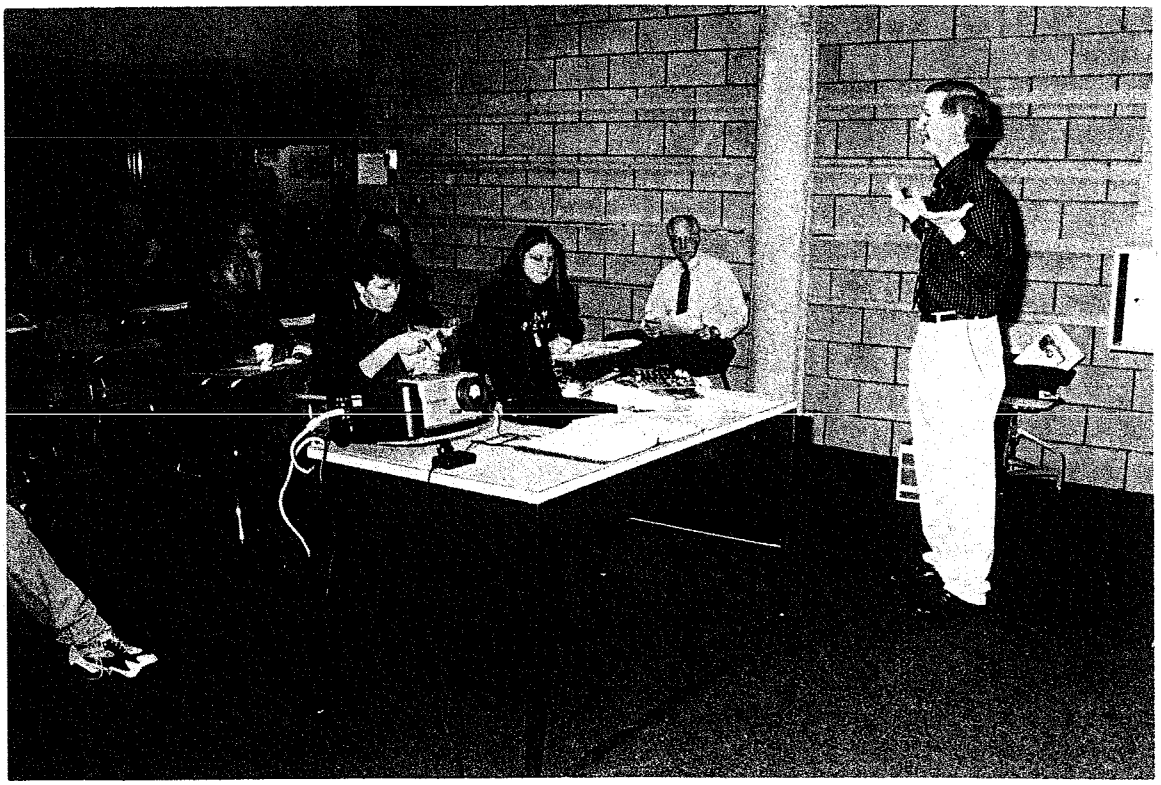
III. Instructional Technology and Distance Learning Projects

A fundamental goal of the higher education technology initiative is to enhance teaching and learning at our institutions. During the past four years, the Information and Instructional Technology Services (IITS) unit at URI has made significant strides to bring instructional technology to the classroom. The University expanded its capacity for distance learning with the development of a University Virtual Classroom web site and the procurement of course development software. Instructional Technology Centers for faculty development of courseware and instructional materials were expanded in Providence and at the Kingston campus to assist with this endeavor.

IITS upgraded the satellite system and an audio system in the distance education classroom at the College of Continuing Education (CCE). Additionally, *CBT Systems* computer-based

training software was implemented and a rich set of adaptive software for the physically challenged was installed on special workstations. State-of-the-art classroom technology such as *Smartboards* and LCD/overhead projectors were installed at selected sites. Multimedia development and production facilities have been renovated at Chafee Hall, including newly designed spaces for the Instructional Technology Center, *Media 100* Production Room, TV/Video Studio, *PictureTel* and *PolyCom* Distance Education Classrooms, digital cameras, film/video recording equipment, and the services unit that provides classroom media assistance. Additional monitors, VCRs and media storage units have been installed at the Kingston and CCE Instructional Technology Centers.

A video distribution system using cable TV equipment has been installed in Chafee Hall. This new equipment, coupled with a cable TV contract, facilitates the distribution of instructional video and cable TV to classrooms and all dorm rooms. The library media room is connected to the video equipment to facilitate the distribution of videotaped materials to students' facilities. In the past year, URI installed sound systems in the distance education facilities, and upgraded the Kirk Engineering *PictureTel* video conferencing equipment. Additionally, software upgrades for *Media 100* digital editing equipment were completed. During 2000 the IITS unit also upgraded monitors, camcorders, and visual presenters for selected technology classrooms.



Distance Learning at CCRI

AV Associates has collaborated with CCRI to develop plans for a sophisticated distance-learning classroom on the CCRI Lincoln campus. This renovation is planned for spring 2001. The Community College also purchased and installed *PictureTel* equipment and has begun to utilize this gear to allow video transmission of meetings between constituencies from different campuses. The equipment is currently being used to teach selected chemistry courses on two campuses using only one instructor. An interdepartmental group is collaborating to provide training on this equipment and assist with the planning of this new facility.

CCRI has created a Center for Instructional Technology on each campus to provide faculty with state-of-the-art multimedia development platforms. The equipment includes scanners, slide scanners, laser printers, CD-ROM writers, and digital and audio players and recorders. digital cameras and camcorders are now available for faculty to borrow from our Learning Resources Center. A faculty support coordinator has been hired in the Computer Resources area to provide one-on-one tutorials and assistance to faculty who are interested in using these centers.

Twenty-three faculty members from CCRI have reaped the benefits of the Teaching With Technology Fellows program in collaboration with URI and RIC, with seven more faculty members scheduled to attend in the spring of 2001. The CCRI fellows have shared their experiences with colleagues on campus and several participated in a teaching with technology conference held at CCRI in May of 2000.

Technology initiative funding has helped Rhode Island College to procure and install a *Polycom* video-teleconferencing unit to promote distance learning and conferencing in the RIC Technology Center. The College implemented WebCT (Web Course Tools), which allows faculty members to augment their classes with information over the World Wide Web. Two classrooms, Gaige 373 and Horace Mann 191, were equipped with *SmartBoards*, which are electronic whiteboards that enable instructors to manipulate computers and devices by simply touching the screen.

IV. Training and Support Projects

The technology initiative contains a relatively minor budget for training and support projects. Nevertheless, these areas are extremely important for developing skills among information technology professionals and faculty to make the best use of the new technologies and to use these new resources to deliver new and innovative instruction to students.

URI students working on a project at one of the labs.
Photo by Nora Lewis.

Rhode Island College reorganized its technical staff to focus on user services and support. As part of this reorganization, over the past three years technology initiative funds were used to provide approximately 90 weeks of technology training for RIC technical support staff together with new desktop technology-training for RIC technical support staff, faculty and staff. The College installed CBT (Computer Based Training) with over 100 titles for faculty and staff to learn various subjects from Microsoft Word to Windows NT. The classes are self-paced with

each participant able to track their progress individually. The entire project is web-enabled so classes can be taken on-campus with any web browser. In addition, the College has also implemented a help desk using *Track-IT* software.

In 2000, the Computer Resource department at CCRI hired an Assistant Director for User Services to coordinate technology support services on campus. In July of 2000, CCRI developed and implemented help desk services for faculty, staff, and students. An existing staff member was reassigned to the Help Desk on a full-time basis. Additional support resources at CCRI include new staff to augment the existing support staff, the purchase of customizable documentation, and an expanding web site, all of which have been funded outside of the technology initiative

CCRI has developed a Faculty Training Program that includes roundtable meetings, a Teaching with Technology Conference and two three-day faculty-training workshops that included 245 CCRI faculty this past fall. Most recently CCRI developed and offered a student training program providing free introductory sessions covering; computing at CCRI, writing papers with MS Word, and offer orientations to WebCT and Campus Pipeline. (Over 60 sessions will be offered at the three campuses through spring 2000.)

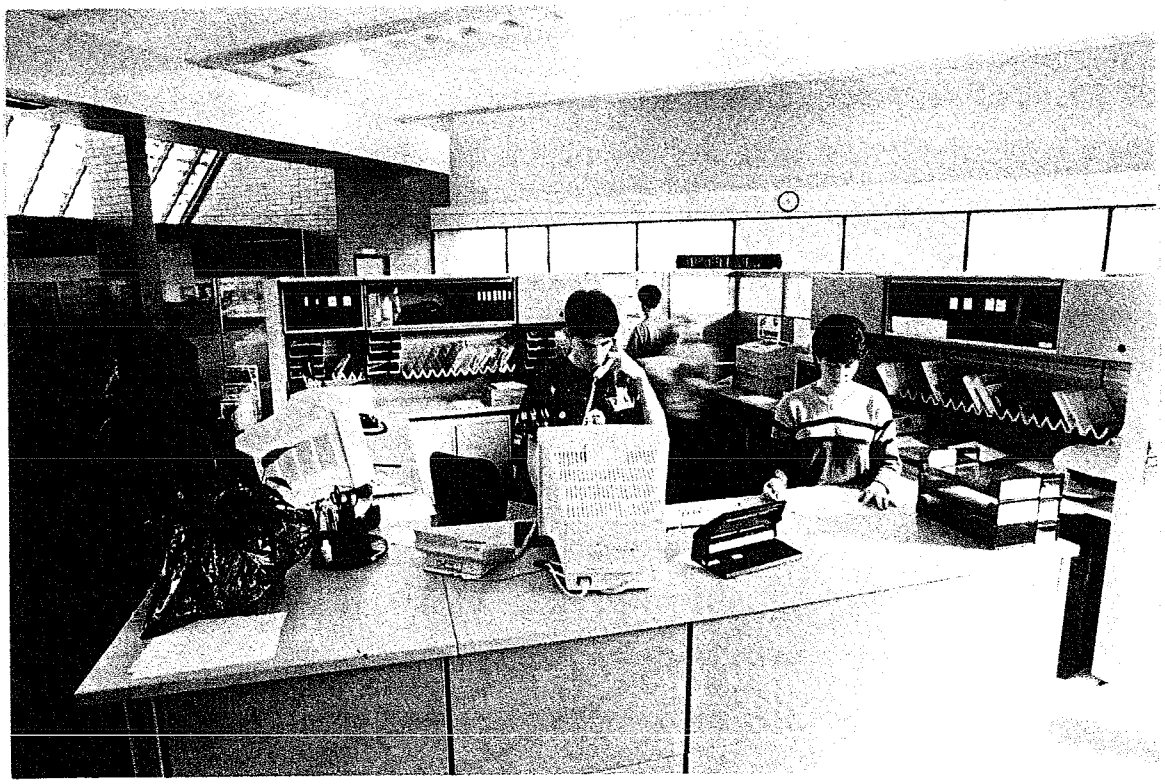
Technology initiative funding was instrumental in allowing the University to implement a ***Teaching with Technology Fellows*** training program. In 1999 and 2000, this program provided faculty with rigorous training in desktop multimedia applications. Faculty from CCRI and RIC have also participated in this University-sponsored program. Faculty *teaching fellows* received grants to develop various multimedia equipment and software. Workshops were held to engage faculty in the development of new and innovative teaching materials – a good example of how URI, RIC, and CCRI collaborate on important system-wide ventures. During the past year, IITS help to provide faculty with technical support and training in WebCT, a web-based curriculum integration package.

Aside from training, URI has continued work to improve help desk facilities within the main library-computing laboratory. The technology initiative has allowed URI to acquire *Remedy Help desk* software and associated *"knowledge databases,"* which are designed to provide

online support to all University computer users, students, faculty and staff, over the campus network and via dial-up access. In addition to automated support, the URI help desk handles typical computing hardware and software problems via telephone or on a "walk-in" basis.

V. Administrative Projects

The technology initiative included funding to assist with enhancing the system's administrative systems. These funds have been a resource for the University to being implementation and upgrades to outdated administrative applications with PeopleSoft higher education administrative applications. The Office of Higher Education assisted with the funding of this project, giving $746,000 in FY 2000. The University committed $442,000 in 1999 from the technology initiative for consulting support from *KPMG Peat Marwick*. However, in 2000, the University employed independent consultants to assist in the implementation



Help Desk in Technology Center, Mann Hall at RIC.
Photo by Gordon Rowley.

Through the technology initiative, CCRI acquired and implemented an imaging system which is connected to CCRI's network and is currently being used to archive student

admissions and financial aid data. The implementation of the new *EPOS* Interactive Voice Response (IVR) system has continued this year. The new system will provide enhanced functionality to the registration features currently available; it will also allow students to monitor their admissions or financial aid status, grades, account balances, and pay tuition bills using a credit card. CCRI has also purchased the Web for Students product from *SCT* with funding outside the technology initiative. Through a web browser, this software provides similar functionality as *EPOS*, as well as providing access to student degree audits and a dynamic list of available courses. A new fixed assets application and associated hardware were purchased by the Community College through a combination of Department of Administration funding and the technology initiative. This software will enable tracking of assets using barcode labels and a hand held scanner. The Focus reporting toolset for *VMS* and the *Web Focus* suite was purchased to provide easy access to data within our existing *SCT* Plus 2000 information systems. *Web Focus* is a sophisticated reporting tool which will enhance the productivity of our MIS group in the existing computing environment as well as providing graphical reporting capabilities via the web to end users from all sectors of our campus. This tool can be used when we migrate our applications to *PeopleSoft* ensuring the value of our training investment.

During the past year, Rhode Island College and *KPMG* have made significant progress in implementing version 7.6 of *PeopleSoft* Student, Financials, and Human Resources applications. Work continues on the RIC implementation with an expected cost of $5 million (in funding outside the Technology Initiative) through the current year. A new *Periphonics* Interactive Voice Response system has been integrated with the *PeopleSoft* applications. The College used technology initiative funds to replace an outdated telephone system with a state-of-the-art PBX telephone system (*Nortel Meridian 1).* In conjunction with installation of the PBX, the College installed a campus-wide voice messaging system, which for the first time provides the ability for a student to leave voice mail messages for faculty. A future messaging project is the integration and accessibility of voice mail and e-mail from either telephone or personal computer. The new PBX switch which the College is

installing will allow for enhancements to the Emergency 911 system, significantly improving campus safety, security, and health care emergency response.