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Center for Computer-Based Learning Doctor of Arts in Information Science and in Training and Learning

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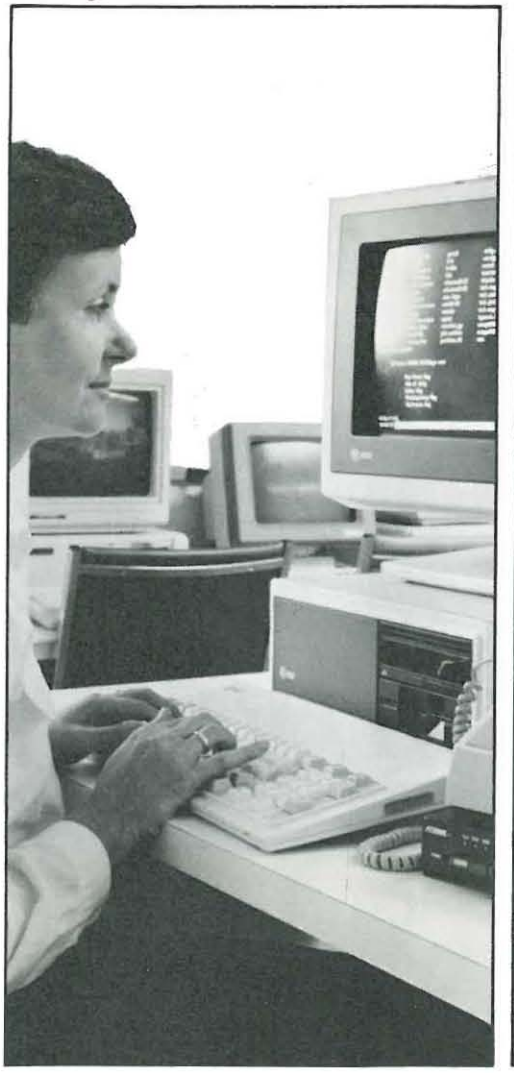
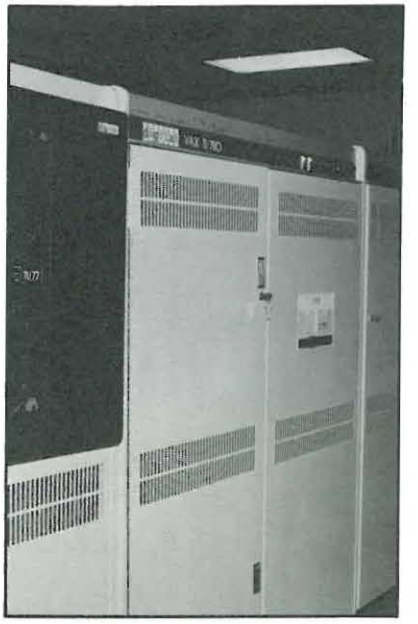
Doctor of Arts in Information Science and in Training and Learning

Computer-Based Programs for Professionals
Delivered Through UNIX*

Leadership

for the
Information Society





NOVA UNIVERSITY
CENTER FOR COMPUTER-BASED LEARNING
3301 College Avenue
Ft. Lauderdale, FL 33314

* *UNIX is a trademark of AT&T and Bell Laboratories.*

HOLLYWOOD CENTER

Dr. John A. Scigliano
Dean, Center for Computer-Based Learning

Dr. Barry A. Centini
Director, Information Sciences

Dr. Marlyn J. Kemper
Associate Director, Information Sciences

Rationale and Mission for the Center for Computer-Based Learning (CBL)

The Center for Computer-Based Learning serves as a University-wide resource in the field of computer science and telecommunications to assist in providing a new breed of leaders--professionals who are prepared to lead in the rapidly expanding information society. With the advent of Nova's "teleport" and new developments in telecommunications and satellite technology, the University itself has taken the lead in technologically-based education. The mission of Nova University emphasizes the importance of alternative delivery of education through technology and telecommunications, and the CBL is a major vehicle for supporting this work.

The CBL was established to facilitate an electronic community at Nova University in which faculty and students can share ideas, work cooperatively on projects, and advance in their professions through research and development activities. The electronic community is a new concept in learning. It promotes the application of computer tools and utilities to improve instruction, improves communication among participants in the learning environment, and enhances the overall effectiveness of education within the University.

The work of professionals is heavily involved with information. The explosive increase in the quantity of that information has created a demand for persons trained in information management skills, and it has placed pressure on the professions to respond by training their own members in information handling techniques. To name a few, the professions of law, medicine, engineering, education, and the sciences have felt the need to provide additional training in the information and computer science fields to their constituencies.

In two fields, library science and the vast area of training, a major problem has developed--the growth in technological tools for information handling and the escalation in the rate of growth of information itself have outstripped the rate with which professionals are able to maintain competency. This situation is aggravated by two conditions: the public's demand for more knowledge and the demand on organizations to understand their environments in new ways. The first condition has been brought on by the computer revolution, and the second was generated by the forces of international competition, especially the rise of industrial giants like Japan and Germany. Nova University works to meet these demands through its cadre of field-based and computer-based graduate programs.

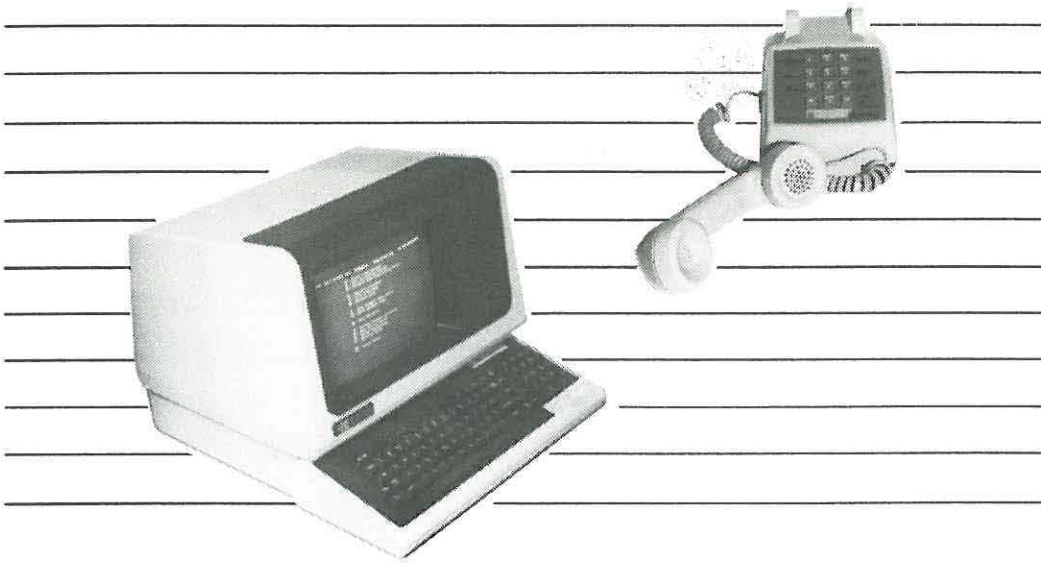
Today, the computer is a necessary tool for knowledge workers. Much of the work in the information specialities, and in the field of training, is being accomplished using computers. Using the computer effectively is necessary for success in these fields. Nova University's philosophy is that it makes sense to use the student's natural work environment for learning.

The Doctor of Arts Degree (D.A.) was designed originally for professionals in higher education and training. Today, the D.A. degree is granted in a wide range of disciplines in over fifty universities across the country. It has been viewed as a viable path to renewal and professional growth for practitioners who seek a terminal degree. The Nova D.A. degree program is a challenging opportunity for professionals who want to learn more about the new technologies while at the same time applying those technologies to earning credit in a graduate degree program and in their jobs.

Nova University offers the D.A. program in a field-based mode because of its experience with doctoral level programming. The University currently operates graduate programs in many states across the country. The rationale for field-based programs was stated by Dale Tillery of the University of California, Berkeley in his presentation before the National Board of Graduate Education:

"As in the clinic, the courts, and the laboratory the arena for much professional learning is in the daily life of real institutions. Why demand that the student leave these natural laboratories for the lecture hall or the seminar room? It makes more sense to import the theoretical and scholarly components to this real world than to deport the student from the very settings in which he needs to gain and refine new insights, sensitivities, and skills. This recognition of the great learning possibilities in professional settings need not result in provincialism or in self-confirmation."

To this day, Tillery's comments continue to justify the delivery of instruction to the professional's locale--in the field-based mode. In the D. A. program, the electronic link between student and professor couples the strengths of the field-based mode of delivery with telecommunications for a continuous interchange of ideas. The resulting environment for learning helps make the education of knowledge workers and information professionals a more meaningful and enriching experience. In this way Nova University expects to produce the leaders for the emerging information society.



UNIX* Via Telecommunications: The Online Frontier

By

John A. Scigliano
Barry A. Centini
Al P. Mizell

Nova University

Abstract

The authors describe their experiences with several computer-based online doctoral and master's programs that use the UNIX operating system for delivery. These experiences include use of modems, terminal emulators, packet switching networks, teleconferencing, online tutoring, large statistical analysis packages, database management utilities, CAI authoring systems, and writing improvement tools. The advantages, challenges, and problems inherent in the use of modern technology based upon these experiences with the UNIX operating system suggest ways that educators can use telecommunications to improve learning. Several "next steps" for the use of telecommunications in education are suggested.

*UNIX is a Trademark of AT&T and Bell Laboratories

"The DAIS program at Nova University is one of the truly innovative programs in the country. It offers librarians, school media specialists and information managers the opportunity to obtain skills in data communications and information storage and retrieval. In my three years in the program I progressed to a confident and knowledgeable manager of information technologies. Through Nova, I was able to learn the electronic techniques so vitally important in the changing world of information science."

DAIS, Rhode Island

Paul Catano

The Role of the Electronic Community

W. Stanley Brown of Bell Laboratories, in a presentation at the American Library Association Annual Meeting of 1983 in Los Angeles, set the stage for online work of this nature. Brown called the futuristic collection of emerging computer and telecommunications technologies "electronic communities." His model contained four major categories: file systems (writing tools, electronic mail, computer conferencing, bulletin boards, and calendar aids); databases (bibliographic, historical, and scientific); advanced services (online ordering, news, and weather); and network services (file transfer, virtual terminal access, and cooperating processes). At the heart of all this was the UNIX operating system developed at Bell Laboratories by Ken Thompson and Dennis Ritchie. Following Brown's lead, Nova University's computer-based programs have grown into a true electronic community of teachers and students. To reach the frontier, a student needs only to dial a local Tymnet number and log-in to UNIX.

The computer-based programs at Nova depend heavily on microcomputers, modems, and telecommunication networks in conjunction with a supermini computer host. Students from across the country conduct their online classwork in coordination with lecturers who teach the seminars. Students complete their online work using the tools of UNIX, and complete their offline assignments using a personal computer with a word processor and other utilities.

There are many benefits derived from online participation in the electronic community. These stem from the UNIX system's ability to network a vast array of resources for communication and information processing. The benefits include:

1. Electronic mail that speeds communication and gives rapid feedback on learning problems, reduces paperwork, allows storage and retrieval of student records, and helps provide a better understanding of policies and procedures.

2. Computer conferences that support discussion of issues and concepts before seminars, allow contributions on topics over a period of weeks or months, provide a means for program development and evaluation. Nova has several modes of computer conferencing that include the Notesfile system (from PLATO designed at the University of Illinois) to several home-grown systems ranging from simple shell scripts to complex real time-group "talk" systems written in the C programming language.

3. UNIX tools that support rapid retrieval of information required for learning and writing-improvement tools that enhance communication.

4. Computer-assisted instruction that provides rapid feedback to students and a log of students' progress. The LEARN CAI system in Unix applies its own CAI style to teaching users about Unix. The Instructional Workbench will soon be added to the list of programs that can be used for lesson and course design.

In addition to equipping me with new skills to work in today's information environment, the credential will provide increased recognition as my college strives to add more doctorate degrees to its faculty. I am proud to be associated with an institution of Nova's caliber where programs are delivered by a scholarly faculty of national and international acclaim and where immediate feedback is received."

DAIS, Alaska

Evelyn Bonner

5. An online environment that provides an ideal setting for students to share completed projects (databases of approved practicum proposals, completed practicums, and major field projects).

The electronic community idea has been implemented fully in the computer-based graduate degree programs of Nova University. The availability of telecommunications networks, sophisticated software, and affordable personal computers makes these programs a reality today. Now, the programs are able to blend naturally with the real world environments: electronic communication, networking of resources, word processing, and interlibrary loan servicing through electronic mail. The reduced costs of mounting a national effort of this kind came about within this decade. The role of Unix in supporting the entire program should not be discounted, and Brown's organization, AT&T Technologies (Bell Laboratories), can take credit for both UNIX and Dr. Brown.

"Nova's DATL program is a real winner. It meets my particular need for advanced education in a challenging innovative environment. The value of this education is evident in the results received from having applied the concepts and skills at my job as a university faculty member. I find that I am using tomorrow's skills today."

DATL, Virginia Dave Netherton

In line with its role as a developer of alternative delivery systems, in 1983, Nova University introduced a computer-based doctor of arts in information science degree (DAIS) that was based on students use of a personal computer, modem, and regular telephone lines. Students made connection online with a campus-based main-frame computer, central staff and faculty on the main campus, and fellow students across the country. In 1984, two additional doctorates were developed and offered: the doctor of education degree in computer education (CED) and the doctor of arts in training and learning (DATL). Each is a three-year, 66 semester-hour degree program. In early 1986, the first pilot students began the master of science in computer-based learning program, and now the first students in the educational specialist program have begun work toward their degrees.

The delivery system that was developed includes eight major components: 1) face-to-face seminars (either regional or summer/winter meetings); 2) study guides with readings and assignments; 3) online communications with faculty and fellow students; 4) computer-assisted instruction online via a supermini computer; 5) online conferences in each study area to discuss issues related to the area; 6) online transmission of assignments and receipt of feedback from instructors; 7) final exams in each study area taken in person at the seminar or institute meetings; and 8) field-based action research projects known as practicums.

Students begin work, after acceptance into the program, by learning how to communicate within the operating system on the Nova University VAX-11/780 host computer using the Tymnet long distance packet switching system. They upload and download files and papers that they create offline using their own word processing programs.

To make these programs work, a host of questions had to be answered about the curriculum, the faculty, the delivery process, the hardware and software, and the students themselves. The university-wide curriculum committee and the Academic Council had to be satisfied that the quality of the programs would be maintained and that the programs would be financially viable. In attempting to answer these questions, it was found that a great deal was being learned by trial and error. Lessons learned in the first doctoral program were used in the next program, and so on. Some of the lessons learned were also used in an undergraduate offshoot of the program and a proposal is now being prepared for the K-12 laboratory school so that group can benefit from the lessons being learned. It seems reasonable that other institutions are going to be exploring this approach to education and this article will help document some of the experiences here so that others can benefit from the initial work being done.

The following is a brief description of three of the doctoral programs and the master's and educational specialist degrees offered through the electronic community. The DAIS and DATL programs are quite similar in format. The entry requirements include a master's degree in the major field of study, a

"The DAIS program at Nova University is possibly the most innovative program in a university setting. My professional growth as an educator and information specialist was enhanced by this doctoral program. I would highly recommend any of the Computer-Based Learning programs at Nova. The DAIS program offered the opportunity to explore new and exciting technological advancements and to concentrate on areas of interest to the individual or to solve work related problems using technology as the springboard."

DAIS, Florida Penny Brown

portfolio of work that demonstrates competency at the doctoral level, and appropriate letters of recommendations. In addition, students need a personal computer and modem to access the Tymnet system.

Once online, students begin their initial orientation to telecommunications and the UNIX operating system. In the doctor of arts programs, students meet quarterly for a weekend at a "cluster location" in their part of the country. All students in a cluster begin together and move through the program as a unit. However, due to the individualized nature of the medium, students can set their own working pace within the general time framework.

"When I entered the DAIS program, I was more than a little apprehensive about being "out there all alone" with a computer, a modem, and some software, knowing that there would be only occasional face-to-face contact with instructors and other students; but the encouragement I received from The Management of DAIS and the esprit de corps that developed among the students, not to mention the opportunity to work in the UNIX environment, combined to make it all an enjoyable challenge. Thanks, Nova!"

DAIS, Alabama Lowell Berenguer

Doctor of Arts in Information Science

The D.A.I.S program consists of six 5-credit study areas and four practicums (i.e. real-world problem-solving activities using computers or telecommunications to help solve the problem identified). The study areas are --

1. Digital Computers for Information Management;
2. Computer-Based Research and Statistics for Information Science;
3. Strategic Management for Libraries and Information Centers;
4. Telecommunications, Networking, and Computer Applications in Information Science;
5. Systems Analysis, Systems Design, Operations Research, and Computer Simulation in Information Science;
6. Database Management Systems, Text Processing, and Information Retrieval.

Students are required to complete online assignments in a set of generic content fields, as well as, to specialize in one area of each course. For example, in the Strategic Management course, students have a choice of specializing in leadership, marketing, strategic planning, finance and budgeting, or the management of information technology. Whatever the speciality, students are expected to demonstrate leadership skills in addressing significant improvements in their work environments.

Doctor of Arts in Training and Learning

The D.A.T.L. program is based on the premise that training personnel today are managers of information. In this context, their role has been similar to the information scientist. Students in this program take a core of courses in information science that is similar to the DAIS program. The first part of the program involves the student in the following:

1. Digital Computers for Information Management;
2. Computer-Based Research and Statistics for Information Science;
3. Database Management Systems, Text Processing, and Information Retrieval.

The second part of the DATL program focuses on cultivating the skills needed by today's training professional.

The new demands on specialists in the computer-based training field require them to collect the "right" information and package it in a form that leads to effective training programs. Courses in the specialty include the following:

1. Digital Computers and Telecommunications;
2. Educational Research and Evaluation;

"Nova University's DATL program provides an innovative solution to my needs for graduate study in telecommunications and training. The courses are well planned and provide a flexible structure that closely parallels my current professional needs as well as being future-oriented. The faculty and student support systems are excellent. The high quality faculty-student interchange of ideas and learning found in Nova's Graduate program cannot be matched by traditional graduate programs. The faculty support and advising at Nova is what other universities dream about."

DATL, Virginia

3. Software and Courseware Design for Computer-Based Learning.

As in the DAIS program, the students are required to complete four practicums, a major field project, and a comprehensive examination. In-person seminars , as well as, online presentations are given.

Doctor of Education in Computer Education

The doctor of education in Computer Education (Ed.D.) program accepts students with the same qualifications as the D.A. except the master's degree can be in any area. In addition, the applicants must be computer literate and must become proficient in advanced BASIC and introductory Pascal programming by the end of their second year in the program.

The Ed.D. is a three-year program consisting of 72 semester hours. Up to six semester hours may be transferred into the Ed.D. program if they are recent, relevant, and of doctoral level. The four major components of the doctoral program (Ed.D.) in computer education are 1) the eight study areas, 2) the professional experience project (PEP), 3) six 1-week institutes, and 4) three practicums.

The study areas in the Ed.D. program are --

1. Digital Computers and Telecommunications
2. Educational Research and Evaluation
3. Learning Theory and Computer-Based Learning
4. Database Management Systems
5. Courseware
6. Instructional Systems
7. Advanced Structured Programming
8. Management and Leadership in the Use of Technology

In the Ed.D. program students focus on improving educational practice through the application of course concepts and skills.

Master of Science in Computer-Based Learning:

The next degrees to be developed using the telecommunications format were the master of science and the educational specialist degrees with a major in computer-based learning (CBL). Both of these degrees require 18 to 24 months to complete and require 36 semester hours of work. They share a common core of six courses (different core for the M.S. and the Ed.S.) and one practicum during the first year for 24 semester hours. The last six months of the program requires each student to select a specialty area from the three currently offered: adult education, electronic education, or training and learning. There are four specialty courses in the specialty area. The practicum is also focused on the specialty selected.

In all computer-based programs, students work extensively at home and with word processors preparing assignments and projects for

"By enrolling at Nova, I have been able to learn about state-of-the-art instructional technology by using and applying state-of-the-art instructional technology. I have maximized my learning and study times; established dynamic telecommunication dialogues with faculty, national lecturers and colleagues regardless of geographical location; and have created and capitalized on a strong interface between my world of work and my world of education."

DATL, Virginia

transmission online. They also contact their professors online and participate in electronic conferences. There are a number of electronic tools online in the UNIX system that all students must master as well.

When students meet at seminars or institutes, they attend formal class presentations and interact with fellow students and the staff. They also use this time together to take exams in each study area to validate their online work and to demonstrate mastery of the content in the study area. Nationally known scholars, practitioners, and other experts give presentations at these meetings in addition to the formal classes.

Online Utilities: A Rapid Overview

UNIX As An Environment for Learning

There are several good reasons why UNIX was selected for use in the programs at Nova University. The obvious reason is that it is a powerful system that has been tested by thousands of Bell Laboratories employees for almost two decades, and it works well. UNIX has over 300 commands that can be used by students as they acquire the generic skills needed to function in the complex information environments of the 1980's. The UNIX system promises hope for professionals in meeting the challenges posed by the diverse and complex information problems of modern organizations.

The UNIX operating system, developed by Bell Laboratories, serves as the host environment for all online work. Applications packages used by students in the program include relational databases, statistical tools, simulation languages, and numerous search and retrieval tools. All assignments, practicums, and dissertations (major field projects) are uploaded to the host machine where they are stored in online databases for future reference by faculty and students. UNIX provides utilities to integrate the computer into the teaching/learning process in ways vastly different from the traditional classroom environment. In the UNIX environment the student maintains a high degree of control of his or her own learning. The positive attributes of the UNIX environment are --

1. It integrates the tools of information science into the learning situation in a continuous process;

2. It provides a high degree of independence for students while permitting monitoring and control by program staff;

3. It provides opportunities for exploration, design, and creativity with novel forms of tools, processes, and systems.

The UNIX system provides a built-in computer-assisted instruction (CAI) utility that presents the basics of the system to students through scripts or lessons. Bell Laboratories named this CAI system "LEARN." LEARN is a CAI authoring system and is used to develop customized scripts for the programs. New students are encouraged to take all the LEARN courses available in the system. An online manual describing each command can be accessed, and a user friendly menu system has been developed that presents several options for CAI.

In addition to LEARN, our UNIX system supports the AT&T Instructional Workbench (IWB). The IWB is an authoring system designed especially for UNIX. It includes menu systems, lesson templates, test templates, as well as a system for managing student progress. IWB comes equipped with courses about the UNIX operating system that can be used for a basic introduction to work online.

A UNIX laboratory has been established on the Nova campus with various microcomputers and terminals connected by direct lines and modems to Nova's VAX. The lab is used to introduce students to the system in a hands-on, coaching manner. The lab is used extensively by all students enrolled in computer-based programs.

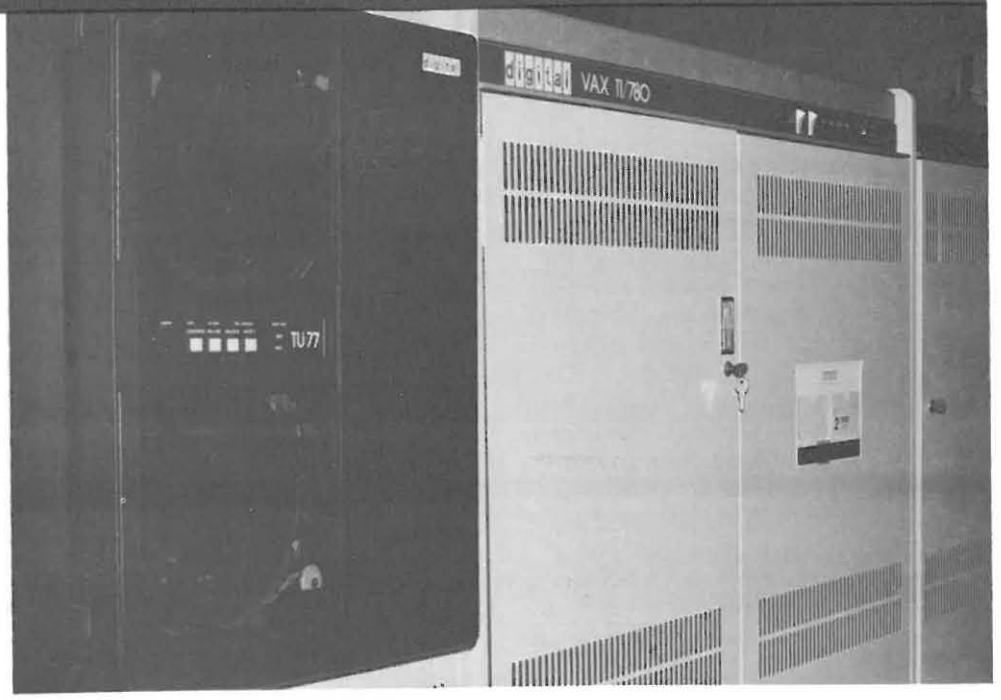
UNIX is both the message and method of delivery, and this presents some problems. For example, in the course on digital computers in information science students explore the tools and application programs of UNIX, but to do so students should be comfortable moving about within the UNIX environment. To accommodate a wide variety of learning styles and beginning competencies a series of menu driven options was created. These options are included in a general menu that leads the student through a series of other menus and to the menus accompanying the seminar conferences.

Electronic mail is a key utility in delivering the program. Students send all assignments, receive all feedback, and communicate with their peers and their instructors through electronic mail. On log-in the students are notified if mail has been delivered during their electronic absence.

The mail utility provides a way for one user to transfer files to any other user on the system. The electronic community extends to all parts of the University. For example, the president of Nova University is an active user and enjoys discussing academic matters online with students and faculty.

All course assignments are available both online and in study guides for each course. Much of the work on assignments is done offline and then uploaded to the student's home directory. Later, assignments are mailed (electronically) to the proper destination or directory. Assignments are designed to require extensive manipulation of text or data by the many application programs in UNIX, and all text submitted to Nova must be treated by the appropriate tools of the Writer's Workbench (WWB). This paper has been analyzed by WWB programs and formatted with a UNIX program called nroff.

A computer conference is conducted before each seminar. Each conference follows a common format: a conference "seed" solicits



comments on a given topic, comments are entered by students through a menu- driven program; and indexes and other commands are used by students to read responses.

UNIX provides many methods for students to communicate directly with their peers and their professors. One provides a split screen--the top half for the user and the bottom for the individual receiving the message. The other method is less attractive but useful for users who lack a cursor control feature for their screens. A recent addition called "phone," not only provides the split screen feature, but enables several users to hold "conference calls" online. In this utility users have their own window and it is possible for users to issue commands to UNIX without leaving the phone conversation.

In addition UNIX provides a hierarchical file system that is tree shaped and contains special files called directories that contain lists of file names. By developing their own tree structures, students can organize information in novel ways. UNIX provides many tools for data management without the need for special software additions.
Group participation online is made possible by a program we call THE ELECTRONIC CLASSROOM (ECR). This utility enables a classroom atmosphere to prevail online. The Electronic Classroom uses the "curses" cursor motion modules of UNIX to display a lecture window and a student attendance/question window. The attendance window displays a list of user codes of students who have logged into the ECR, and it also shows how students are responding to questions asked in the TRUE/FALSE or multiple choice modes (only the instructor can view these student responses). The text of the lecture is presented by an instructor through the 16 x 80 window at the top of the screen. The instructor can read in text from UNIX files or display the output of commands run in the Unix shell. A student can ask a question at any time during the lecture, and the instructor is notified of this through the appearance of a question mark to the left of the questioner's name. A question window is made to appear by the instructor and in it appears the text of the question typed in by the student. All students can see the content of both the lecture and the question windows.

Finally, the student learning environment on UNIX contains a host of applications packages for such as editors, statistical tools, database management systems, and language compilers and interpreters. Students are required to do their own analysis of problems in statistics through use of S and SPSS (two of the most powerful online statistical tools available in the world today.) Prolog is used by students in many assignments dealing with artificial intelligence and several expert system shells are available online for building expert systems. The online environment is truly a "show-me" world where one survives through hard work and intelligent use of time and tools.

In the online programs a steady flow of information moves to and from the students. Information management skills are necessary just to survive online. Acknowledgement of receipt of assignments, evaluative feedback, record keeping, tutorial interactions, and practicum reviews must be done with conservation of time and storage space in mind. Considerable thought goes into shaping the online community to its regular members. These online utilities make it possible for students to amplify skills that would otherwise lay dormant or underutilized. A host of expert systems tools has been developed by the staff to cope with the high volume of student work transferred in each day.

The Future Of Telecommunications

There are at least five recurring issues in online work that will continue to pose challenges for educators. These points are issues because the telecommunications field, as well as the students who come to learn, are changing continuously. Institutions must learn to cope with this change and provide environments that satisfy needs of learners with the most effective and efficient technology available. Students will demand no less, and we should not settle for less. The issues are --

1. Educational institutions should investigate alternate ways of getting computers into students' hands rather than purchasing the hardware for them. The problems of maintaining computers in operating condition for novice users far outweigh the advantages from encouraging new student participation. This aspect of entry level literacy in any educational program is crucial to success in telecommunications-based learning.

2. Online learning does not work the same for all students. The small samples used in early studies indicate complex interactions between learning styles and online work.

3. The computer-based learning environment must be modified regularly through systems programs to allow staff and faculty to adapt to changing student needs.

4. Faculty must have both traditional classroom skills and computer competencies to be effective.

5. Since the cost of personal computers and access to telecommunication nets have dropped significantly, the hardware and software choices made by institutions are more important than ever before; more alternatives are now available. The decisions will get even harder to make in the future. Obviously, help from computer hardware and software professionals is necessary in making these decisions as the alternatives continue to grow and the speed with which the decisions must be made increases.

At Nova University a great many lessons about online learning and the electronic community have been learned. A few of these lessons have been outlined above, and many more will be learned in the future. Any educational institution that enters into an electronic community must be prepared to make sacrifices to accommodate students. For example, to be effective the electronic community requires attention twenty-four hours a day. Different time zones and varied work habits of students can produce novel demands on professors and administrators. Therefore, professors and administrators involved in the electronic community must also be willing to work more and different hours than that found in the traditional workload standard.

Similar obligations fall on students. Students who do well online appear to have learning styles that give them the self-motivation and the stamina needed to complete complex tasks. Obviously, other parameters help determine this ability, such as aptitude for computer work, high tolerance for ambiguity, and traits that fall in the realm of personality. Preliminary data show that many factors contribute to the ways students adapt to online environments.

Success in learning through telecommunications, however, will probably be determined (as usual) by teachers committed to hard work and their willingness to go beyond what is expected of them. Students who approach learning through telecommunications links will get no special treatment, but just more hard work. Both students and teachers will have to be aware of the new demands made by these new opportunities; the faint of heart need not apply. Life on this frontier is full of both its burdens and its rewards.

NOVA'S CENTER FOR COMPUTER BASED LEARNING MASTER MENU

a) UNIX BASICS

Doctoral Course Directories:
Common
---
c) Digital Computers
d) Research & Statistics
e) Data Base Management
Dais Only
---
f) Strategic Management

g) Systems Analysis

h) Telecommunications
Datl Only

---
i) Instructional Systems

j) Human Factors

k) Courseware

b) Program Overview

Other Directories:

l) Practicums
m) Orientation
n) Tutorials
o) Seminar Conferences
p) Seminar/Course Schedules
q) HELP and/or a ROADMAP
r) Information about Students
s) Power Tools
t) Master's Programs (MSTL)
u) CSA Doctoral Programs Menu
v) Student Bulletin Board
w) PROBLEM WITH ANY MENU

FIGURE 1. DAIS "MAIN MENU"

```
************ P1 jtm Jerome T. Maddock ***************

CIRCULATION CALL-IN PROCEDURE USING THE UNIX
OPERATING
SYSTEM FOR THE LIBRARY OF THE SOLAR ENERGY RESEARCH
INSTITUTE

P1  jtm  Jerome T. Maddock

The Author ** jtm ** is online

The following modules are available for reading
01  Title          02  Abstract      03  Introduction
04  Background     05  Procedures     06  Results
07  Discussion     08  Bibliography   09  Comments

CHOOSE ONE OF THE FOLLOWING:
1)  Read an individual section
2)  Read the Practicum in its entirety
3)  "Talk" to the author
4)  Write a comment for the Comment section
    Top ten lines will be mailed to author
5)  See the author's vitae

Input your choice 1-5, or x to exit
```

FIGURE 2. MENU FOR ACCESSING PRACTICUM 1 FOR STUDENT JTM

TASK C.1.4 IMPROVEMENT OF MARKETING OPERATIONS FOR MY ORGANIZATION

The following improvements have been suggested by:
Meltzer, Dr. Morton F. Marketing Yourself in Your Organization. Associated Information Managers.
Washington, DC. 1981

A. Products and Services

1. Product/Service Development: Any new or proposed services or products will take into account the benefits to the user as a prime criterion of utility or raison d'etre. For example, a new product might be to prepare a monthly announcement bulletin for those personnel who use the Wind Energy Research Branch Library. However, before it is actually produced, it will be "test marketed" to determine if there is any interest in receiving it on the part of potential users.

2. Packaging: Products will be attractively packaged to demonstrate the professionalism of the library staff and to lend credibility to the content.

3. Branding: A readily identifiable "logo" for library products, brochures, newsletters, etc. has been developed. The next step will be to ensure that this logo is clearly evident on all library products, so that users will readily identify the fact that the product came from the library.

FIGURE 3. SAMPLE RESULTS FROM ASSIGNMENT IN "STRATEGIC MANAGEMENT" COURSE

NOVA UNIVERSITY
Center for Computer-Based Learning
Parker Building
3301 College Avenue
Ft. Lauderdale, FL 33314
(305) 475-7047

Admissions Application and Student Census Form

DOCTOR OF ARTS IN INFORMATION SCIENCE ☐
DOCTOR OF ARTS IN TRAINING AND LEARNING ☐

(Type or print - use black pen)

$30.00 Application Fee

DATE OF DESIRED ADMISSION _____
Mo Year

OFFICE USE ONLY

PROGRAM CLUSTER CODE _____	
ACADEMIC UNIT _____	INITIAL
ADMIT STATUS _____	
MAJOR CODE _____	INITIAL

SOCIAL SECURITY NO. (U.S.A.) ___ - __ - ____

Marital Status: ☐ Single ☐ Married
Sex: ☐ Male ☐ Female

Date of Birth __ __ / __ __ / __ __

Last Name First Name M.I. Maiden Name

Address: Street & Number Apt. City

County State Zip ( ) Home Telephone

EDUCATIONAL INFORMATION:

PRIOR EDUCATION: HOW LONG SINCE YOUR LAST FORMAL EDUCATION? YEARS _____

Please list all Colleges and Universities Attended. Transcripts for all Graduate work is required

Institution	Location	Degree	Major	Date Awarded

EMPLOYMENT :

Job Title _____

Employer Name Address ( ) Telephone

IN CASE OF EMERGENCY:

Name of Person to Contact _____ Relationship of Contact (parent, friend, etc.) _____

Address of Person to Contact _____ Home Telephone ( ) _____ Business Tel. and Ext. ( ) _____

CITIZENSHIP STATUS

U.S. Citizen: Yes ☐ Resident Alien ☐ Non-Res. Alien ☐

Do you require an I-20? _____

Indicate country of citizenship _____

Additional procedures are required for admission of non-resident alien students

ETHNIC ORIGIN DATA REQUIRED UNDER CIVIL RIGHTS ACT

U.S. Citizen and Resident Alien

Select one of the following

- ☐ Hispanic Origin
- ☐ White (Not of Hispanic Origin)
- ☐ Black (Not of Hispanic Origin)
- ☐ Asian or Pacific Islander
- ☐ American Indian or Alaskan Native
- ☐ Other _____

NOTE: Three letters of recommendation and Master's Degree transcript must be mailed directly to:

Admissions Office
Center for Computer-Based Learning
Nova University
3301 College Avenue
Fort Lauderdale, FL 33314

Financial Aid:

Will you be applying for Financial Aid ☐ Yes ☐ No

Are you eligible for VA benefit ☐ Yes ☐ No

HOW DID YOU FIRST HEAR ABOUT THE PROGRAMS?

- ☐ Colleague/Friend
- ☐ Advertisement
- ☐ Flyer or Announcement
- ☐ Conference
- ☐ Employer
- ☐ Nova Staff
- ☐ College Professor or Counselor
- ☐ Direct Mail
- ☐ Nova student graduate
- ☐ Educational Directory (e.g. Barron's, Peterson's)
- ☐ Other
- ☐ Professional Publication

_____ Please specify

_____ Please specify

Essay: Please describe your reasons for pursuing this degree. Include the nature of work that you expect to be involved in after graduating from the program, and your long-term goals. Why did you decide to apply to Nova? (please continue on another page if necessary)

ORIGINAL WORK

Assignments such as course preparations, exams, tests, projects, term papers, practicums, etc., must be the original work of the student. Original work may include the thoughts and words of another, but if this is the case, those ideas or words must be indicated by quotation marks or other accepted reference devices.

Work is not original which has been submitted previously by the author or by anyone else for academic credit. Work is not original which has been copied or partially copied from any other source including another student unless such copying is acknowledged by the person submitting the work for the credit at the time the work is being submitted or unless copying, sharing, or joint authorship is an expressed part of the assignment. Exams and tests are original work when no unauthorized aid is given, received, or used prior to or during the course of the examination. Students violating this policy will be penalized up to and including expulsion.

I have read and do understand the above statement on original work at Nova University.

I declare that the above information, to the best of my knowledge, is true, correct, and complete.

I agree to abide by all rules and regulations of Nova University.

Applicant Signature _____ Date _____

To the Applicant:

Pursuant to the Family Education Rights Privacy Act (Buckley Amendment) enacted on December 31, 1974, ☐ I DO, ☐ I DO NOT give permission for my name and/or address and phone number to be used for promotional purposes.

Applicant Signature _____ Date _____

Please send application to:

NOVA UNIVERSITY
Center for Computer-Based Learning
Parker Building
3301 College Avenue
Ft. Lauderdale, FL 33314

NOVA UNIVERSITY
Center for Computer-Based Learning
Parker Building
3301 College Avenue
Ft. Lauderdale, FL 33314
(305) 475-7047

Recommendation for Admission

DOCTOR OF ARTS IN INFORMATION SCIENCE ☐
DOCTOR OF ARTS IN TRAINING AND LEARNING ☐

Name of Applicant _____

Institution or Organization _____

TO THE APPLICANT: One of the forms should be completed by an administrator or supervisor who can indicate the nature of your performance. Three recommendation forms are required.

TO THE EVALUATOR: The individual named above has made application to the Doctor of Arts program. One of the steps in the admissions process requires each applicant to obtain three letters of recommendation from administrators or supervisors denoting that the applicant has performed satisfactorily in his or her work. The items listed below concern the applicant's performance on the job. Your appraisal of the applicant will be used to help determine if the Doctor of Arts program is appropriate for this person. Please rate the applicant on the following items:

1.	Attitude toward work	Somewhat negative	Average	Positive
2.	Motivation toward work	Low	Average	High
3.	Ability to carry out tasks	Low	Average	High
4.	Resourcefulness in identifying and carrying out tasks	Low	Average	High
5.	Emotional Control	Unstable	Usually well-balanced	Always well balanced
6.	Interpersonal Relationship	Avoided	Tolerated by others	Well liked by others

7. Most significant strength _____

_____

8. Most significant weakness _____

_____

9. I have known the applicant for _____ years. The applicant has been a member of my staff _____ years. I have known him/her well _____, slightly _____.

10. In my opinion, the candidate's potential for success in a doctoral program of studies is: Good _____, Average _____, Poor _____. I am unable to rate the candidate _____.

11. In my opinion, the candidate has the ability to carry out effectively an institutional or organizational reasearch project: Yes _____, No _____.

12. I have observed the candidate's work on institutional or organizational projects and find the product: Good _____, Average _____, Poor _____, Unknown _____.

13. The candidate works effectively with administrators or supervisors at his institution or organization. Yes _____, No _____.

14. The candidate has been involved in innovative projects at his institution or organization. Yes _____, No _____.

Date _____

Signature _____

Name _____

Title _____

Institution or Organization _____

Department _____

MAILING ADDRESS: Admissions Office
Center for Computer-Based Learning
Nova University
3301 College Avenue
Fort Lauderdale, Florida 33314

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Date _____

Signature _____

Name _____

Title _____

Institution or Organization _____

Department _____

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Nova University
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Fort Lauderdale, Florida 33314

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Parker Building
3301 College Avenue
Ft. Lauderdale, FL 33314
(305) 475-7047

Portfolio Form

Name _____

ADMISSIONS PORTFOLIO FORM*

1. EMPLOYMENT HISTORY (Specific job descriptions and dates)

2. GRADUATE COURSES FOR CREDIT

*Provide documentation or examples of any of the following items that you feel necessary to support your portfolio.

3. WORKSHOPS, SEMINARS, CONFERENCES, AND SPECIAL MEETINGS (List Topics)

4. PUBLICATIONS, PROPOSALS, AND REPORTS YOU HAVE AUTHORED

5. MAJOR IMPROVEMENT PROJECTS OR INNOVATIONS YOU HAVE INSTITUTED IN YOUR INSTITUTION OR ORGANIZATION

6. AWARDS, ACHIEVEMENTS, OR SPECIAL RECOGNITION YOU HAVE RECEIVED

7. OFFICES HELD IN PROFESSIONAL ORGANIZATION

8. HOW MANY TIMES HAVE YOU RUN FOR OFFICE? _____

9. COMMUNITY INVOLVEMENT (Clubs, churches, committees, etc.)

10. EXPERIENCE WITH AUTOMATED SYSTEMS OR COMPUTERS (Micro, mini or mainframe--describe the nature and length of the experience)

11. WHAT COMPUTER EQUIPMENT DO YOU HAVE AVAILABLE FOR USE IN THIS PROGRAM? (terminals, mainframes, microcomputers, etc.) Also indicate the types of operating systems you have used on these machines.

Nova University
OFFICE OF THE REGISTRAR
3301 College Avenue, Fort Lauderdale, Florida 33314, 305/475-7414

TRANSCRIPT REQUEST FORM

STUDENT: To Request a Transcript from your past school to Nova University. Fill in the blanks on both parts.

Dear Alma Mater:

Please send an official transcript of my academic work while attending your institution to Nova University. Return the form below to Nova University.

A. I attended your school from _____ to _____.

B. While in attendance my name on your records was:

_____
Last First Middle/Maiden

C. My student identification number was: _____

Thank you for your assistance.

Sincerely,

_____
Signature

DEAR ALMA MATER: PLEASE RETURN THIS FORM WITH TRANSCRIPT, THANK YOU

TRANSCRIPT TRANSMITTAL FORM

Social Security # _____ Date _____

Name _____
Last First Middle/Maiden

City _____ State _____ Zip _____

PLEASE SEND _____ COPIES TO NOVA PROGRAM: _____
Indicate Program Applied For

Nova University
OFFICE OF THE REGISTRAR
3301 College Avenue, Fort Lauderdale, Florida 33314, 305/475-7414

TRANSCRIPT REQUEST FORM

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_____
Signature

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TRANSCRIPT TRANSMITTAL FORM

Social Security # _____ Date _____

Name _____
Last First Middle/Maiden

City _____ State _____ Zip _____

PLEASE SEND _____ COPIES TO NOVA PROGRAM: _____
Indicate Program Applied For

Nova University was chartered by the State of Florida in 1964. Numerous graduate programs offer master's, educational specialist, doctoral degrees and postgraduate education. Nova College offers undergraduate education and the University school, a demonstration school, serves children from preschool through high school. In addition, nondegree, continuing education and certificate programs are available.

From the beginning, the University has distinguished itself by its innovative outlook, its unique programs that provide both traditional and nontraditional choices in education programs, and its research in many fields aimed at solving the problems of immediate concern to mankind.

The Nova University campus is located on a 200-acre site west of Fort Lauderdale, Florida, at 3301 College Avenue in the town of Davie.

Nova University is accredited by the Commission of colleges of the Southern Association of Colleges and Schools to award bachelor's, master's, educational specialist, and doctoral degrees. Nova University admits students of any race, color, and national or ethnic origin.

NOVA UNIVERSITY
CENTER FOR COMPUTER- BASED LEARNING

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