

**TECHNOLOGY ACCESS FOR COMMUNITY-BASED REHABILITATION
PROGRAMS IN REGION V**

By

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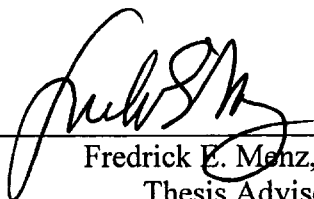
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ABSTRACT

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The Technology Capacity of Community-Based Rehabilitation Programs in Region V

<u>Vocational Rehabilitation</u>	<u>Fredrick E. Menz, Ph.D.</u>	<u>May 2000</u>	<u>60+</u>
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The current technology revolution has had a tremendous impact on how we get the morning news, the way we shop for cars and how we learn. This has caused business and industry to make changes in staff, budget, process and training. Growing businesses have learned how to embrace and maximize technology to ensure they are viable in today's marketplace.

During this time of change, staff training has become a critical issue. Organizations are allocating substantial resources for hiring and training in attempts to retain their workforce. The shortage in labor has created tremendous competition amongst employers, and job seekers have more options in this vibrant economy than ever before. Furthermore, persons in entry-level positions are receiving competitive salaries often with benefits and signing bonuses. As a result of this fierce competition, many workers are jumping from employer to employer creating widespread turnover in these positions.

Community-based rehabilitation programs (CRP's) have also experienced tremendous change in the past several years. Legislation, a shortage of employees in the workforce and a robust economy have forced these programs to access new revenue streams and change programs and services. These programs must adapt to the cyber revolution and learn from the best practices of their for-profit counterparts. Many CRP's are struggling to train direct service workers and this is complicated by the need for those staff members to spend time with their consumers. CRP's are now forced to address these changes as they attempt to provide quality services to persons with disabilities.

The goal of the Continuing Education Center for Community-Based Rehabilitation Programs in Region V is to increase the capacity of community-based rehabilitation programs to provide quality services which ensure employment outcomes for persons with disabilities. In order to achieve this goal the Continuing Education Center has developed Rehabilitation On-Line Learning and other sources of distance education to address training needs. In order to adequately build a distance learning infrastructure and training that CRP's can access, technological factors must be taken into consideration.

The purpose of this study is to identify the current level of technology within community-based rehabilitation programs in Region V that will allow them to access distance learning provided by the Continuing Education Center. There are many technological and organizational factors that will determine how effectively CRP's can take advantage of these offerings. Technological factors include the type of computers within the organization or the community, software and hardware factors and non-computer related access to technology such as videocassette recorders, video conferencing systems, and fax machines. Organizational factors include current numbers of computers in the organizations, direct service workers access to

computer and technology for training purposes, organizational plans to upgrade or purchase new equipment, the willingness of administrators to allow direct service workers to participate in distance learning and how much administrators are willing to invest in distance learning.

Knowledge of those technological and organizational factors within Community-Based-Rehabilitation programs will allow the Continuing Education Center to create and modify distance learning workshops and platforms that are accessible and relevant to direct service workers in Region V. This information will form the basis for the development of delivery modalities, pricing structures, curriculum and support services.

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CHAPTER I

INTRODUCTION

Overview

The Americans with Disabilities Act and, more recently, the reauthorization of the Rehabilitation Act in 1997 have created new vocational opportunities for persons with disabilities. As a result of these changes, community-based rehabilitation programs (CRPs) now need to offer more diverse services to better serve consumers. Rehabilitation practitioners who provide direct services to persons with disabilities face new challenges as they attempt to provide quality vocational services. In order to do this, staff must have the training necessary to provide these services. In this tight labor market and time of high staff turnover, flexible and on demand training is essential to meet the needs of this changing industry. Distance learning, particularly online learning, have the potential to deliver timely, demand driven training to practitioners at anytime and anyplace.

Community-based rehabilitation programs are not only offering a place for persons with disabilities to work but are also involved in the effort of community integration. In order to accomplish this, service providers are required to have a wider variety of skill and knowledge to ensure quality employment outcomes. Sheltered workshops have begun to give way to CRPs, which offer a menu of vocational services to diverse populations.

The changing infrastructure of rehabilitation has shifted its priority for services to persons with the most severe disabilities. Additionally, unemployment has reached its lowest point in several decades creating a labor shortage and adding to the potential for persons with disabilities to secure work within the community. Despite these opportunities and these changes in social attitude and legislation persons with disabilities remain unemployed at disproportionate rates.

Moreover, this labor shortage has also added to the dilemma of insufficient numbers of direct service workers in community-based rehabilitation programs. Shortages are indicated by sizable numbers of unfilled positions in the areas of job placement, development, and independent living (Pelavin, 1987). Therefore, changes in social policy and rehabilitation programs have required a greater number of trained personnel to work in community-based programs who provide direct service and job support.

According to Wallace and Johnson (1992), several studies have identified issues associated with training for direct service personnel. Among the most pressing are:

1. Direct service practitioners are often the least trained and experienced even though they often represent the largest number of persons employed in service programs;
2. Training competencies and needs are not sufficiently understood or documented and a lack of consensus on training standards and requirements exists; and
3. Training is unavailable to large numbers of direct service personnel because it is still centralized (Wallace & Johnson, 1992).

Furthermore, there does not appear to be a typical profile of a person filling the role of a direct service employee. Some direct service personnel are college graduates who have bachelor's degrees in fields other than human services or associate of arts degrees from community colleges. Others are high school graduates with no experience in human services. The lack of training of direct service staff is evidenced by the 73% of practitioners who have no degrees (Neubert & Krishnaswami, 1992). A study of rehabilitation practitioners in Maryland found 48% of job coaches had high school degrees and many did not meet the minimal standards required by the state for persons providing vocational or job coaching services.

Supported employment, with its shift from facility-based to community-based training of persons with disabilities, has also required the acquisition of new skills by personnel as well as redefinition of roles and functions both for direct service personnel and administrators (Neubert & Krishnaswami, 1992). This shift in the delivery of vocational services has created a new line of direct service workers who may be responsible for supported employment, job development, and various other duties that come along with community placement. The mix of responsibilities and blurring of job descriptions makes it difficult to identify training needs in many organizations. The challenge to professionals who must train supported employment personnel is both programmatic and instructional in nature (Hartley-Malivuk & LeRoy, 1991).

Menz (1987) cited the following training problems for community rehabilitation programs:

The change in service delivery to persons with disabilities has an especially strong impact on smaller facilities in areas with less economic growth. Currently, smaller vocational rehabilitation facilities do not have the necessary personnel to provide adequate training to their employees and often do not have the financial resources to keep a trainer on staff or to send service providers to training supplied by outside entities. When funding is available for training, programs often cannot send direct service providers due to lack of staff to provide services while other members are away. The ability of small or large facilities to respond to a wide range of training needs will differentially affect both their training budget and facility functioning. Smaller facilities are not capable of layering training resources in ways which larger facilities are able to do. (p. 69)

Organizations providing services to persons with disabilities have difficulty maintaining a skilled and committed staff. Low wages, lack of benefits and the demands of long work hours

are disincentives that do not promote staff longevity. In their grant application for the Continuing Education Center for Community-Based Rehabilitation Programs in Region V, the University of Wisconsin-Stout identified goals for increasing the quality and duration of staff tenure as well as services provided to consumers. Those goals are:

1. Increase the numbers of competent rehabilitation personnel in community-based programs.
2. Improve the retention of competent personnel in community-based programs.
3. Increase the quality of benefits and outcomes achieved by participants in community-based programs.
4. Increase the positive impact of community-based programs on rehabilitation services and rehabilitation program outcomes.
5. Increase the pool of rehabilitation leaders from among practitioners, consumers and administrators involved with community-based programs (McAlees & Menz, 1995).

Distance Learning Applications for Training of Rehabilitation Staff

Distance learning programs offer promise in the rehabilitation field and may help address shortages of trained personnel. Distance learning encompasses a variety of technologies including print media, voice technologies, video technologies, postal mail, and computer technologies (Burgstahler, 1995). Distance learning provides training to rehabilitation staff that minimizes time away from the work of rehabilitation, length of training, and personal and organizational costs to acquire needed skills (Menz & McAlees, 1995). The proliferation of the Internet and the plummeting prices of powerful personal computers contribute to the increased availability of distance learning in on-line formats. The Internet offers a dynamic and interactive medium for communication, dissemination of new information, and the sharing of ideas.

Community-based rehabilitation organizations that have access to distance education technologies can provide staff training that is on demand, current and flexible.

Statement of the Problem

Creating distance learning training and platforms are in large dependent upon the technology access of the participants. As the Continuing Education Center for Community-Based Rehabilitation Programs in Region V develops distance learning opportunities for its constituents, questions about accessibility need to be addressed. At the present the Center has developed an Internet-based training platform entitled Rehabilitation On-Line Learning (ROLL) that distributes training to rehabilitation practitioners and professionals in Region V in asynchronous and synchronous formats.

The goal of this study is to determine the current level of technology among community-based rehabilitation programs in Region V and their capacity to access distance learning provided by the Continuing Education Center. There are many technological and organizational factors that will determine how effectively CRPs can take advantage of distance learning offerings. Technological factors include the type of computers within the organization or the community, software and hardware, and non-computer related access to technology such as videocassette recorders, videoconferencing systems, and fax machines. Organizational factors include actual numbers of computers in organizations, direct service worker access to computer and technology for training purposes, organizational plans to upgrade or purchase new equipment, the willingness of administrators to allow direct service workers to participate in distance learning and how much administrators are willing to invest in distance learning.

Knowledge of those technological and organizational factors within community-based rehabilitation programs will allow the Continuing Education Center to create and modify

distance learning workshops and platforms that are accessible and relevant to direct service workers in Region V. This information will form the basis for the development of delivery modalities, pricing structures, curriculum and support services.

Research Objectives

1. Determine the number of computers and the hardware, software, and internet capabilities within community-based organizations in Region V.
2. Identify technology disparities between states and among community-based organizations based on individuals served and revenue.
3. Determine access to other distance learning technologies (i.e., telephone conferencing systems, fax machines, videocassette recorders and videoconferencing systems).
4. Determine access to distance learning technologies for direct service practitioners.
5. Identify the anticipated investment community-based rehabilitation programs will make in distance learning technologies and training in Region V.

Definition of Terms

486: The 80486 architecture, for example, supports clock rates from 33 to 66 MHz. Because Intel discovered that it couldn't trademark its CPU numbers, it shifted to a naming scheme, starting with the Pentium processors. Intel's latest and sixth-generation chip is called the Pentium Pro (http://webopedia.Internet.com/TERM/I/Intel_microprocessors.html).

Cable Modem: A modem designed to operate over cable TV lines. Because the coaxial cable used by cable TV provides much greater bandwidth than telephone lines, a cable modem can be used to achieve extremely fast access to the World Wide Web (http://webopedia.Internet.com/TERM/c/cable_modem.html).

Community-Based Employment: Work in settings where there is opportunity for an integration of persons with and without disabilities, where real goods or valuable services are produced, and where varying degrees of services may be provided to maintain competitive employment (Decoteau, 1989).

Community-Based Rehabilitation Program (Community-Based Rehabilitation Facility) (CRP): A program that provides directly or facilitates the provision of vocational rehabilitation services to individuals with disabilities, and that provides, singly or in combination, for an individual with a disability to enable the individual to maximize opportunities for employment, including career advancement (McAlee & Menz, 1995).

CD-ROM: Pronounced *see-dee-rom*, abbreviation of *Compact Disc-Read-Only Memory*. A type of optical disk capable of storing large amounts of data -- up to 1GB (gigabyte), although the most common size is 650MB (megabytes). A single CD-ROM has the storage capacity of 700 floppy disks, enough memory to store about 300,000 pages of text (http://webopedia.Internet.com/TERM/C/CD_ROM.html).

Dial-Up: Refers to connecting a device to a network via a modem and a public telephone network. Dial-up access is really just like a phone connection, except that the parties at the two ends are computer devices rather than people. Because dial-up access uses normal telephone lines, the quality of the connection is not always good and data rates are limited. In the past, the maximum data rate with dial-up access was 56 Kbps (56,000 bits per second), but new technologies such as ISDN are providing faster rates (http://webopedia.Internet.com/TERM/d/dial_up_access.html).

Direct Service Practitioner: Professionals or paraprofessionals who perform direct community-based rehabilitation services. Or a professional or paraprofessional who provides

(direct) assistance (and supervision) to (a worker) in job placement, travel, skill training at the job site, ongoing and long-term assessment, (gradually reducing) his/her time at the job site as the (worker) become better adjusted and more independent on the job (Wehman & Melia, 1985).

Distance Learning: Distance learning are planned educational strategies that normally occur in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements (Kearsley & Moore, 1996).

DSL: Refers collectively to all types of *digital subscriber lines*, the two main categories being ADSL and SDSL. DSL technologies use sophisticated modulation schemes to pack data onto copper wires. xDSL offers much higher speeds - up to 32 Mbps for downstream traffic, and from 32 Kbps to over 1 Mbps for upstream traffic (<http://webopedia.Internet.com/TERM/x/xDSL.html>).

DVD: Short for *digital versatile disc* or *digital video disc*, a new type of CD-ROM that holds a minimum of 4.7GB (gigabytes), enough for a full-length movie. The DVD specification supports disks with capacities from 4.7GB to 17GB and access rates of 600KBps to 1.3 MBps (<http://webopedia.Internet.com/TERM/D/DVD.html>).

Ethernet: A local-area network (LAN) protocol developed by Xerox Corporation in cooperation with DEC and Intel in 1976. Ethernet uses a bus or star topology and supports data transfer rates of 10 Mbps (<http://webopedia.Internet.com/TERM/E/Ethernet.html>).

Internet: A global network connecting millions of computers. As of 1999, the Internet has more than 200 million users worldwide, and that number continues to grow rapidly. More

than 100 countries are linked into exchanges of data, news and opinions

(<http://webopedia.Internet.com/TERM/I/Internet.html>).

ISDN: Abbreviation of *integrated services digital network*, an international communications standard for sending voice, video, and data over digital telephone lines or normal telephone wires. ISDN supports data transfer rates of 64 Kbps (64,000 bits per second) (<http://webopedia.Internet.com/TERM/I/ISDN.html>).

Linux: Pronounced *lee-nucks*, A freely-distributable implementation of UNIX that runs on a number of hardware platforms, including Intel and Motorola microprocessors. It was developed mainly by Linus Torvalds. Because it is free, and runs on many platforms, including PCs, Macintoshes and Amigas, Linux has become extremely popular over the last couple years (<http://webopedia.Internet.com/TERM/L/Linux.html>).

MAC: A popular model of computer made by Apple Computer. Introduced in 1984, the Macintosh features a graphical user interface (GUI) that utilizes windows, icons, and a mouse to make it relatively easy for novices to use the computer productively. All models since 1994 are based on the PowerPC microprocessor (<http://webopedia.Internet.com/TERM/M/mac.html>).

Modem: Acronym for *modulator-demodulator*. A modem is a device or program that enables a computer to transmit data over telephone lines. Computer information is stored digitally, whereas information transmitted over telephone lines is transmitted in the form of analog waves. A modem converts between these two forms (<http://webopedia.Internet.com/TERM/m/modem.html>).

MHZ: Abbreviation for megahertz. One MHz represents one million cycles per second. The speed of microprocessors, called the clock speed, is measured in megahertz (<http://webopedia.Internet.com/TERM/M/MHZ.html>).

PC: Short for *personal computer* or *IBM PC*. The first personal computer produced by IBM was called the *PC*, and increasingly the term PC came to mean IBM or IBM-compatible personal computers, to the exclusion of other types of personal computers, such as Macintoshes (<http://webopedia.Internet.com/TERM/P/PC.html>).

Peripheral: Any external device attached to a computer. Examples of peripherals include printers, disk drives, display monitors, keyboards, and mice (http://webopedia.Internet.com/TERM/p/peripheral_device.html).

Regional Continuing Education Center (RCEP): This program supports training centers that serve either a federal region and provide a broad integrated sequence of training activities addressing recurrent and common training needs of employed rehabilitation personnel throughout the multi-state geographical area. General RCEPs provide training for newly employed and experienced State agency staff. Community rehabilitation RCEPs provide training programs for staff public and private nonprofit community rehabilitation agencies serving consumers of the public rehabilitation program. Generally, RSA funds one general and one CRP-RCEP per Department of Education Region (except for Region IV which has two general RCEPs) (<http://www.ed.gov/offices/OSERS/RSA/PGMS/RT/catrcep.html>, 2000).

T1/T3: A dedicated phone connection supporting data rates of 1.544Mbits per second. A T1 line consists of 24 individual channels, each of which supports 64Kbits per second. Each 64Kbit/second channel can be configured to carry voice or data traffic (http://webopedia.Internet.com/TERM/T/T_1_carrier.html)

Videoconferencing: Live, interactive communications between two or more participants at different sites using computer networks to transmit audio and video data (<http://webopedia.Internet.com/TERM/v/videoconferencing.html>).

Windows: A family of operating systems for personal computers. Windows dominates the personal computer world, running on some 90% of all personal computers

(<http://webopedia.Internet.com/TERM/W/Windows.html>).

CHAPTER TWO

REVIEW OF LITERATURE

Overview of Community-Based Rehabilitation Facilities

There are 7,000 community-based rehabilitation organizations differing in size, location, programs, philosophy, and desired outcomes. The average facility serves 387 persons per year and the average yearly facility income was \$768,988 per year with fees for services and earned income accounting for about 90% of total revenues (Botterbusch & Miller, 1999). Only 32% of the operating resources for community-based programs are derived directly from the state-federal system of vocational rehabilitation funding (McAlees & Menz, 1990). The typical community-based program will have 27 full-time employees including administration and direct service (McAlees & Menz, 1995).

Vocational rehabilitation has experienced many trends and the evolution of sheltered workshops to community-based programs has also had an impact on rehabilitation professionals. No longer is it enough to provide employment; the goal is competitive community employment. Reverse integration is beginning to occur with the influx of persons without disabilities working alongside persons with disabilities. CRPs often have both service and commercial functions; for profit and nonprofit organizational structures (Menz, 1987). Their primary focus has been to provide an employment setting where persons with disabilities would be afforded the accommodations and modifications necessary to have successful employment outcomes.

The diverse populations served by community-based rehabilitation organizations poses a significant challenge. Practitioners may work with consumers from a wide range of referral sources with different ethnic and community backgrounds as well as different disabilities types. Currently, community-based vocational rehabilitation programs serve populations with cognitive

disabilities (55%), psychiatric disabilities (13%) and multiple affected disabilities (20%) (Menz & McAlees, 1995).

Community-based rehabilitation programs have become businesses that have multiple customers, must be futures oriented, and therefore have multiple needs associated with training and technical assistance (McAlees & Menz, 1995). The expanded functions and goals of human services programs now promote workforce development, including welfare to work programs, school to work and other vocational incentives which have created new referral sources for CRPs and created new demands for skills and staff training.

Knowledge of consumer experiences from varying backgrounds including substance abuse and persons involved with the criminal justice system adds to the array of challenges. Job titles and job functions for persons working in community-based programs vary from one agency to the next. Advocacy, facilitation, and education are probably the main functions of direct service staff in work settings (Johnson & Wallace, 1992). However the employment specialist might be required to be a salesperson, behavioral scientist, psychologist, counselor and advocate for a supported worker (Harley-Malivuk, 1991).

Regional Rehabilitation Continuing Education Programs

As mentioned above, changes in vocational rehabilitation and community-based rehabilitation programs have caused problems. The lack of a trained workforce to provide direct services has many in the industry scrambling to fill the gaps. This identified lack of training has been addressed on a federal level through the development of Regional Rehabilitation Continuing Education Programs (RRCEPs). The Rehabilitation Services Administration (RSA) throughout its history has sponsored programs and materials for state agency staff development. Even when the federal agency was seriously understaffed, it managed to stimulate and participate

in practitioner training programs (Lebus-Heck, 1990) continue its commitment to staff training through continued support of continuing education centers.

The training needs of rehabilitation practitioners are particularly important to the RRCEPs in order to satisfy federal priorities and to increase quality vocational outcomes for persons with disabilities. According to the Rehabilitation Services Administration, the purpose of the RRCEPs is "to support cooperative agreements for training centers that serve either a Federal region or another geographical area and provide a broad, integrated sequence of training activities" (Rehabilitation Services Administration, 1989).

Through the reauthorization of the Rehabilitation Act in 1997, RSA has designed rehabilitation training programs to:

increase the supply of qualified personnel available for employment in public and private agencies and institutions involved in the vocational rehabilitation and independent living rehabilitation of individuals with handicaps, especially those individuals with the most severe handicaps and maintain and upgrade basic skills and knowledge of personnel employed as providers of vocational, medical, social or psychological rehabilitation services. (Rehabilitation Act U.S. Code, Section 34 CFR, part 85.1)

In 1994 priorities were identified by the Rehabilitation Services Administration for the continuing education centers that serve persons with disabilities. Those priorities relating specifically to training include the following:

1. Conduct training seminars, distance learning activities, and conferences in formats and settings consistent with assessed regional needs and using state of the art methods to achieve maximum participation and create application to service delivery.

2. Correlate information, sources of information and sources of expertise that can be accessed to obtain needed information, training and technical assistance related to recurring needs of community-based programs.

3. Disseminate training curricula and media, alternative instructional methodologies, and other training products which other public and private sector organizations can use to meet similar training needs (McAlees & Menz, 1995).

Improvement of Training Practices

The needs of direct service staff members as well as training delivery modalities must be considered for training to have an impact. Outcomes of training should also be examined to determine trainings impact on the learner, whether it is for credit generation, certificate or promotion. The University of Minnesota's Institute on Community Integration Center identified the need to professionalize direct service positions in order to increase retention and build strong leaders. Suggested strategies to accomplish this include: (a) requiring licensure, (b) requiring pre-service education and training, (c) tying wage increases to training and licensure; (d) providing more steps on the training ladder; and (e) reimbursing direct service staff for education (Larson, 1992).

The needs of adult learners must also be addressed when creating training for this population, as many of the trainees do not respond well to typical stand-up lecture style training or classroom settings. Greater emphasis on problem solving, reflective thinking, cooperative goal setting and logical decision-making may promote stronger models of lifelong learning (Myers, 1992). Self directed learning in which the participants assume greater responsibility for defining goals and strategizing outcomes tends to be consistent with the development of more mature students (Myers, 1992). This can be done with the use of many asynchronous formats

and distance learning. Adult learners desire self-direction and the spontaneous incorporation of personal experience in new learning (Myers, 1992). Distance learning formats lend themselves well to in-facility training that can be applicable to current job situations. Piazza-Templeman and Peters (1992) suggest a shift to a multi-stage training model. Multi-stage training is a shift from traditional stand-up training to a method that emphasizes long-term learning gain. Multi-stage training models share the following characteristics: (a) readiness or awareness building activities preceding major training efforts; (b) specific, skill-based training activities; (c) a system of long-term implementation assistance; and (d) monitoring or maintenance activities to assist the site and to assess the impact of the training effort (Piazza-Templeman & Peters, 1992).

The changing face of vocational rehabilitation and community-based rehabilitation programs has had a definite impact on the manner in which training is delivered to direct service personnel. The creation of core competencies has the potential to create training that is transdisciplinary and sequential, building on the skills of previous training. It has implications for the transfer of skills from various aspects of rehabilitation including, residential, vocational, and educational. The need to provide training that is geared towards adult learners will help secure the attainment of skills and knowledge. Finally, use of new technologies including the Internet, telecommunications, satellite and video may play a significant and effective role, but need to be carefully planned and incorporated to achieve these goals.

Computer Use and the Internet

The number of Americans with computers who have access to the Internet in their home has grown at amazing rates over the past five years. The National Telecommunications Website contains the *Falling Through the Net: Defining the Digital Divide*, the third report, documents the disparity that exists in access to technology in American households and may be considered

one of America's greatest civil right issues. At the end of 1998, over 40 percent of American households owned computers, and one-quarter of all households had Internet access.

Additionally, those who were less likely to have telephones in past surveys, i.e., chiefly young and minority households in rural areas are now more likely to have phones at home.

The study found the following:

1. Households with incomes of \$75,000 and higher are more than *twenty times* more likely to have access to the Internet than those at the lowest income levels, and more than *nine times* as likely to have a computer at home.

2. Whites are more likely to have access to the Internet from home than Blacks or Hispanics have from *any* location.

3. Black and Hispanic households are approximately *one-third* as likely to have home Internet access as households of Asian/Pacific Islander descent, and roughly *two-fifths* as likely as White households.

4. Regardless of income level, Americans living in rural areas are lagging behind in Internet access. Indeed, at the lowest income levels, those in urban areas are more than twice as likely to have Internet access than those earning the same income in rural areas.

5. The gaps between White and Hispanic households, and between White and Black households, are now approximately 5% greater than they were in 1997.

6. The digital divides based on education and income level have also increased in the last year alone. Between 1997 and 1998, the divide between those at the highest and lowest

education levels increased 25 percent, and the divide between those at the highest and lowest income levels grew 29%. (<http://www.ntia.doc.gov/ntiahome/fttn99/introduction.html>).

Distance Learning

Connecting more than 30 million users around the world, the Internet is a network of computer networks that allows people to send messages and retrieve files from users around the world (Yee, 1998). The tremendous growth of the Internet and communication technology has fueled a rapid expansion of distance learning. The 1998 Digital State Report, commissioned by the Progress and Freedom Foundations, found that distance learning courses, while “scarce” in previous year’s study, are now offered by more than 75% of the states (Charp, 1998). The U.S. Department of Education has also approved a pilot project that would allow colleges that enroll 50% or more of their students in online courses or that offer 50% or more of their course through distance learning, to provide financial aid, which was previously banned in the Higher Education Act (Charp, 1998).

Distance learning is comprised of several different types of models. The modes in order of an increasing computer involvement are (a) supplement or adjunct, (b) mixed, and (c) wholly online (McLaren, 1995). Distance learning radically changes accessibility to higher education and alters conceptualizations of a quality educational experience (Yee, 1998).

Overall distance learning course enrollments in the U.S. are expected to grow from 710,000 in 1998 to 2.2 million in 2002 (Jones, 2000). To meet this growth demand, it’s expected that there will be over 40,000 online courses in the year 2000, a quantum increase from the 2,000 offered in January 1998. Most of these courses will be made possible by the 85% of community colleges and 84% of four-year institutions expected to have online offerings by 2002 (Jones, 2000). In his recent book, *The Age of Spiritual Machines* Raymond Kurzweil (1999),

suggests that changes society has witnessed in the technology of education delivery during the past 10 years will be completely dwarfed by what is about to come (Jones, 2000.).

Goals and Characteristics of Distance Learning

Spooner, Jordan, Algozzine, & Spooner (1999) suggested the following six defining characteristics of distance learning:

1. “Separation of the teacher and the student (i.e., separation vs. face to face, in-room lecturing).
2. The influence of an educational organization (e.g., department or college) in the planning, preparation, or delivery of material (vs. a stand-alone professor responsible for content generation and delivery of course information).
3. Use of technical media.
4. Provision for two-way communication, which could be via a prearranged telephone conference with a single student or group of students at a central location at a prescribed time.
5. The possibility of an occasional seminar, which could allow students working independently, perhaps viewing prerecorded videotapes, receiving paper assignments via regular mail, or watching the lecture via cable or satellite TV in their own homes, to assemble as a group in the presence of the instructor of record for the class.
6. Evidence of a division of labor (i.e., a team of individuals involved in the preparation and delivery of course content). Members of the team might include a content expert, graphic illustrators and a TV personality (p. 135).”

The institutional goals for the use of distance learning are to increase learner access to instruction and maximize use of institutional resources. Some of the more dominant rationales for distance learning include: (a) alleviate geographical isolation, (b) resolve scheduling

conflicts, (c) distribute scarce or unique instructional resources, and (d) provide equal educational opportunity for students who are unable to attend traditional classes due to disability (Spooner, Jordan, Algozzine, & Spooner, 1999).

The term distance learning has been used for many years in Europe, Asia, South America and Canada, but only the last 10 years has it been widely accepted in the United States (Gibson, 1995). Colleges and universities have traditionally used distance education to reach adult learners and geographically dispersed students. In fact written correspondence courses predate distance learning, as we talk about it today (Lee, 1998). Allowing for the obvious time delay, correspondence courses fostered one-to-one teaching and interaction and resulted in a strong student-teacher relationship via written word (Jones, 2000).

Distance learning roots are in correspondence study and most contemporary distance learning systems are still heavily dependent upon print and the basic tenets of faculty and learner supports are presumed to be unchanged with the use of distance learning (Gibson, 1995). The focus for designing quality distance education should be on the content, the learners, and the learning outcome (Hillesheim, 1999). According to Gibson & Gibson (1995), the following lessons should be learned from the past 100 years of distance learning:

1. Traditional classroom models should not serve as the model to be emulated in distance learning. Distance learning is different and the classroom model should not be the base against which all success or failure is measured.
2. Training is need to faculty, administrators, and support staff. Successful distance learning requires a different way of doing business. The biggest failure in distance learning is the failure to adequately train and support the needs of faculty and staff.

3. Distance learning students need to “learn how to learn” from a distance learning system and their needs must be continually supported through the learning experience.

4. All of the instructional materials should be integrated. The whole should be greater than the sum of the parts.

5. The novelty effect is short lived. The novelty of the compressed video or any other technology will soon dissipate and the learner will demand quality in the learning experience.

Pedagogy

The pedagogy and design of distance learning is crucial to overall success. New learning technologies have the potential to create an alternative learning environment that supports active learning, if accompanied by shifts in teaching styles, content delivery, and learning activities. Without these changes interactive video courses simply allow instructors to lecture to multiple sites simultaneously and Internet courses are just correspondence courses by email (Ben-Jacob & Levin, 1998). Learner centered design considerations include learner empowerment, curricular flexibility, active learning, anytime-and-anywhere opportunities, and the ability to self-pace (Bitter, 2000).

Delivering professional development courses asynchronously over the Internet involves many instructional design issues (Winfield, Mealy, & Scheibel, 1999). The following are design guidelines utilized by the University of Wisconsin Learning Innovations Center:

1. “Build up user confidence with technology. Student participation in web delivered courses relies on three interdependent technologies: the learner’s computer equipment, the user’s Internet access and the usability of the hyper linked world wide web learning environment. Each of the activities need to be presented in step-by-step fashion to enable the

student to successfully demonstrate key online competencies such as contributing to a discussion, responding to a comment, and submitting an assignment.

2. Build in the instructor's presence and personality. Individual success or failure in a course often depends upon the extent to which students feel a sense of community.

3. Provide a clear set of learning activities. The effective use of hypertext systems requires a sense of purpose while utilizing linked learning resources.

4. Build on the personal and professional experience of the participants. Asynchronous, network-delivered professional courses have been shown to support the development of content expertise and facilitate reflection about practice.

5. Relate content to real situations using case studies. The use of case studies in a hyper-linked or multimedia delivered learning environment has been shown to significantly improve the quality and motivation of the learning experience.

6. Build in collaboration and facilitated team projects. The benefits of online collaboration in Internet-based education have been widely researched. Positive interdependence underlies the successful application of collaborative learning principles" (Winfield, Mealy, & Scheibel, 1998, p. 447).

Interaction is a crucial part of a successful distance learning course and can be accomplished in many ways on the Internet. Online interaction can be synchronous, e.g., chat in real time or asynchronous e.g., list serves and web forums anytime or a combinations of these, e.g., a web forum that changes topics at predictably brief intervals. Although Warn (1999) sees the value of chats for consensus building and meeting impending deadlines, he prefers an asynchronous mode for most educational objectives (Bitter, 2000). However, a variety of tools are currently used to facilitate interaction online.

Advantages

There are many advantages to cyber interaction that are very different from the more traditional concepts and practices in learning. A significant advantage of technology is that one does not have to travel for two days, but instead may reach as many people in two hours. The entire group can exchange knowledge and questions (Lohman, 1998). Harasim and Feeberg argue enthusiastically that in the hands of professors who know what they are doing, online instruction is superior to face-to-face instruction. Online you get to know your students' minds, not just their faces (University of Illinois, 1999).

Bitter (1995) suggests that the Internet and other distance learning technologies have advantages when it comes to interaction with learners.

1. "The Internet has advantages that include the fact that the medium permits simultaneous involvement, written interaction (which often requires more thought than verbal conversation), the documentation of contributions that otherwise might be missed through inattention or selective listening and the ability to print messages for future reference.

2. The Internet also allows instructional sessions to include many of the same international approaches used in face-to-face sessions.

3. Email also can be used with simulated activities as a vehicle for interaction.

4. Role playing scenarios can promote thoughtful responses with some insight.

5. Email can be used for brainstorming and consensus building.

6. Case study analysis also can be accomplished via electronic mail (p. 282)."

Bitter (2000) references Sattler (1997), who suggests the Internet may be an efficient and effective way for learners to engage in a variety of interactive activities as it can permit the following: (a) multiple learning tools, e.g., print/text, graphics, audio, video, animation; (b)

interaction that can be synchronous or asynchronous; (c) learner self-pacing; (d) speedy interchange among learners; (e) continuous and immediate update of information; (f) ready access to a wealth of information including libraries, databases and other sources; (g) convenient accessibility for people with various physical disabilities; (h) the use of different senses for learning; (i) creation of a written, and thus reviewable, record of interactions; and (j) instructors who are continuously available to learners.

In addition to the advantages listed above, distance learning changes the interaction between the content, instructor, and the learner. The distance between instructor and participants helps to promote a focus on learning by participants, rather than on the teaching responsibility of the instructor (Bitter, 1998).

According to Bitter (1998) distance learning is very effective, but how effective and useful depends more on the student than on the instructor (Bitter, 1998). Bitter goes on to describe the following advantages to distance learning:

1. Distance learning has a more flexible schedule and offers the benefit of convenience.
2. Allows for repeated review of materials, e.g., videotapes, CD-ROMs, email messages.
3. Potentially can provide more contact with instructors than in traditional face-to-face.
4. Can potentially reach more learners.

Cost Effectiveness

One of the greatest advantages to distance learning is that it is accessible to a variety of persons in need, from families who find it hard to be away from home, to organizations which cannot readily cover for the absence of a member of their small staff or to rural residents who have to travel great distances (Bitter, 1998).

Many of those who have used distance learning report that it is more cost effective and a definite advantage over face-to-face instruction. Some even suggest bringing the class to the employee can reduce overall training costs by 15% to 50% (Krietzberg, 1998). Web-based training is cheaper, more efficient, and sometimes more effective than classroom training (InfoWorld, 1998). This appears to be accepted by both government and the private sector.

The IRS recently awarded contracts that could total around \$100 million for development of training services, including computer-based training and distance learning. MCI uses its learning network extensively for employee training. It enables MCI to put more than 100 people in one class for a satellite broadcast rather than schedule four classes. It values the savings, especially when their development costs are about the same for distance as for classroom training (Lohman, 1998).

Some higher education institutions and libraries have not found the same cost-benefit ratio that business and industry have experienced. High quality online teaching is time and labor intensive and may not be the income source envisioned by some administrators. Teaching the same number of students online at the same level of quality as in the classroom can require more time and money (University of Illinois, 1999).

Viable distance education programs demand money, time, and human resources, therefore library and school administrators believe that the medium's greatest potential may be in programs that involve specialization and collaboration. Emporia State University grossed about 600,000 in 1997 through its distance education program, but actually lost money because it had to pay seven full-time people to keep the program going at all of its far-flung locations (Chepesiuk, 1998).

Challenges

Despite the impact that distance learning has had on training and education, there are still many challenges that must be addressed. Foremost among the disadvantages to distance learning is the feeling of isolation by the distance learners, who are cut off physically, in most cases, from both their tutors and other students (University of Illinois, 1999).

Competition for participants' time on the job has been an additional challenge. Daily priorities require staff to respond to the demands of the job first, and time for participation in training when it becomes possible (Bitter, 1998). Additionally, not all learners have convenient access to technologies needed for distance learning. Limited bandwidth means slower performance for sound, video and graphics, causing long waits to download that can affect the learning process. Some training programs are also too static, which limits the level of interactivity and inhibits learning (InfoWorld, 1998). Many are interested in learning via these mediums, but are intimidated by the technology itself (Bitter, 1998). Despite its potential, online training has a way to go before it is completely viable for all users. Used in the right context, distance learning may return significant value, but like all technologies, used beyond current capabilities it is likely to disappoint (Kreitzberg, 1998).

Evaluation of Distance Learning

Research on the effectiveness of distance learning is varied in representation and outcome (Spooner, Jordan, Algozzine, & Spooner, 1999). Though the evaluation of distance learning is covered extensively in the literature, most of the discussion focuses on subjective, anecdotal data from learners. There is relatively little true, original research dedicated to explaining or predicting phenomena related to distance learning (University of Illinois, 1999). The most comprehensive review of online teaching effectiveness is Russell's "No Significant Difference

Phenomenon”. Russell has a website and a book listing over 200 studies that found no significant differences in the effectiveness of teaching online (Farber, 1998).

Kerwin (1999) published the results of an evaluation done with instructors and students on attitudes towards distance learning, released in September, 1999. Eleven community college instructors and 334 students in their distance learning classes were surveyed. Data showed conflicting instructor attitudes. Instructors were willing to teach another class via distance learning, but they rated the quality of the courses as equal to or lower than the other classes taught on campus. If we want quality education, we need to recognize its dependence upon a student’s interaction with and immersion in a live and located community of students and faculty (Farber, 1998).

Similar criticism was cited by McKinnon (1998), “The problem, the faculty members say, is that teaching via the Internet is a demanding proposition for professors. That’s mostly because of the large volume of student-teacher contacts required (pp. 31).” There is a qualitative difference between an exchange over the Internet and the exchange between two people in the same geographic space (Becker, 1999). Additionally some classes may be inappropriate for distance learning and some professors worry distance learning may be stealing their control and ownership of their courses (McKinnon, 1998).

This change in technology has resulted in a change in the role of the instructor. Instead of communicating information, instructors “monitor” communication. Instead of selecting information, they “augment” information already provided. This will result in a major change in the way that instructors are trained (Inman & Kerwin, 1999). Some professors find teaching distance learning courses to be an enormous amount of work, more than teaching in a classroom

and they are unconvinced of the method's effectiveness for some students, particularly younger, less motivated ones (McKinnon, 1998).

Student's reaction and evaluations often vary depending on their motivation for enrolling in distance learning rather than more traditional education. Comfort and convenience are positive elements of the distance condition (Spooner, Jordan, Algozzine, & Spooner, 1999). The students from the community college study reported a consistent model of quality. The factor accounting for the most variance was the materials the instructor created. Additionally, direct interaction with instructors, the critical factor in much of traditional classroom instruction, played no role in determining student's satisfaction (Inman & Kerwin, 1999).

The type of student enrolled in distance learning will also have an impact on the evaluations. The "traditional" student is young, full-time and attends face-to-face classes. It is with this student that we associate the need for socialization in college (University of Illinois, 1999). Non-traditional students are often the target of out-reach and the focus of distance learning. Clow (1999) demonstrates that using distance learning to reach off-campus students appears to be appropriate for graduate level courses, but a problem for undergraduate. Undergraduate students felt as if the instructors did not make good use of the technology. The instructor is perceived as being less prepared, less responsive to questions and less enthusiastic. Additionally, undergraduate students expected to retain less, be less interested in the subject material, and find the course to be of less value (Clow, 1999).

In a comparison of course evaluation ratings for a class taught through distance learning and separately face-to-face, Spooner, Jordan, Algozzine, & Spooner (1999) report that ratings of content, rigor and other aspects of distance learning and traditional courses were similar. Additionally, global ratings for the instructor (e.g., effectiveness, contribution to learning, overall

quality compared with others) and opinions about teaching skill (e.g., clarity and effectiveness of presentations, ability to hold interest, motivation to do best work) did not differ. However, in a comparative study of post-course evaluations of both live and two-way interactive television, 57 Masters of Social Work students significantly favored live instruction over televised (Thyer et al, 1998).

Although several studies have examined interactive distance learning, few definitive conclusions have been reached. In some cases, conflicting findings were found (Clow, 1999). Phillips and Peters (1999) completed a comparative study of determinant attributes and satisfaction levels of students. Their findings conflict with previous research that found remote students living in rural areas accessing distance learning tended to feel isolated.

In order to provide effective distance learning instructors may need to make modifications. It is true that matching the educational model with the abilities and interests of students is important in mitigating dropout (O'Brien & Schiro-Geist, 1995). Previous studies indicate that instructors need to adapt their instructional styles to fit the technologies (Clow, 1999). As such, the new paradigms of online instruction calls for new paradigms of evaluation. At this point there is no way of knowing to what extent traditional teaching can be replaced by online material (University of Illinois, 1999).

Distance Learning and Vocational Rehabilitation

The 1992 Amendments to the Rehabilitation Act of 1973, Sec 803(a), proposed regional approaches to in-service and continuing education for vocational rehabilitation (VR) personnel through distance learning and telecommunications. With advances in technology, distance education has become a viable alternative for providing both in-service training to rehabilitation personnel as well as increasing their opportunity to earn advanced degrees without the necessity

of leaving home and job (Eldredge, Gerard, & Smart, 1994). Distance learning programs show promise in the rehabilitation field and may help address shortages of trained personnel (Burgstahler, 1995).

New methods of training must be implemented to meet the increasing demands for quality services to persons with disabilities (Eldredge, Gerard, & Smart, 1994). For administrators of rehabilitation programs, distance learning can be used to train rehabilitation counselors and other staff, develop leadership and administrative skills of managers and provide continuing education (Burgstahler, 1995).

Much of the literature on distance learning in rehabilitation focuses on the need for training and education of rehabilitation personnel in rural areas. The benefits of utilizing current and future technology offer hope for the delivery of rehabilitation training, particularly in sparsely populated areas like Region VIII (Bitter, 1994). Mason (1985) commented on the need for distance for providers of services in rural settings:

Rehabilitation professionals in rural areas have faced tremendous educational disadvantage: it has been economically unfeasible to provide pre-service or in-service training to individuals at a distance from major populations centers. Sometimes rehabilitation professionals participate in summer, evening, or weekend courses at major universities (p. 288).

Rehabilitation has utilized distance learning to tackle a number of needs including the education of rehabilitation counselors and continued training of persons in community-based rehabilitation programs and other areas of service delivery. Grant funding and collaboration between state agencies and universities has helped to fuel this growth. Following are examples of this programming and collaboration:

1. San Diego State University houses the Region IX Rehabilitation Continuing Education Program (RCEP IX). The goal of the project is to increase the education and competencies of VR personnel through university sanctioned academic courses and/or continuing education activities using relevant distance learning strategies, including telecommunications (McFarlane, Harrison, Saba, Bussell, & Turner, 1994).

2. Boston University has an off-campus graduate degree program in Rehabilitation Counseling with a low tech approach using telephones, audiotapes and videotapes (Wood et. al, 1998).

3. Virginia Commonwealth University Rehabilitation Research and Training Center developed a Supported Employment Tele-course Network (SET-NET) using satellite down linking and one-way audio-video television in combination with return voice contact from remote sites via telephone or fax (Wood et. al, 1998).

4. The graduate rehabilitation counseling program at Utah State University distance education program uses videotape and print materials (Eldredge, Gerard, & Smart, 1994). The University of Northern Colorado College of Business Administration received a three year grant award from the Rehabilitation Services Administration in the U.S. Department of Education to provide rehabilitation leadership development activities through distance learning (Bitter,1995).

5. University of North Carolina at Charlotte's Supported Employment Coursework was offered to graduate students through interactive microwave satellite network (Wood et. al, 1998).

The increase in the use of distance learning technology also has implications for persons with disabilities. Those who have little or no difficulty using communication technologies

available today seldom think of the number of people who cannot use them due to a disability. For many of these individuals, distance learning offers the possibility of working at home (McLaren, 1995). However, people in rural areas and people with disabilities tend to have more difficulty accessing the Internet than others. Equal access to this technology requires the commitment of legislators, educators, information providers and others to overcome financial and technical barriers (Burgstahler, 1995).

Despite the access to education that distance learning offers for persons with disabilities, there is still much work to be done to make this completely accessible for all. For a distance learning program, compliance (with the ADA) means that the public facilities at the sending and receiving ends must be accessible. In addition, schools must provide “auxiliary aids and services” to ensure that people with hearing and/or visual impairments can participate fully in the program. Where distance learning programs are offered, the accessibility requirements are no less stringent than for standard educational programs. As distance learning programs grow in number and scope, design professionals and school administrators will continue to refine how they are delivered, while making access easier for everyone (Kessler and Keefe, 1999).

Computer Use Within Vocational Rehabilitation

Despite the proliferation of computer technology and its driving force in today’s economy, literature related to computer use in community-based rehabilitation programs is still quite limited. Most of the information available is related to the use of computer related assessments in vocational evaluations and general computer use for assessments in vocational rehabilitation. Furthermore, much of the research is related to the use of this technology within the state rehabilitation agencies as opposed to community-based rehabilitation organizations.

It seems that not much has changed since the mid 1980s when the Research and Training Center for Community-Based Rehabilitation Programs conducted studies on computer access within CRPs. “There is a fairly sizable and rapidly growing literature on the use of computers with the handicapped, but there has been relatively little written about the use of computers in rehabilitation facilities, per se” (Blakemore, McCray, Coker, 1984). Furthermore this document discussed a handful of other surveys conducted in the 80s and late 70s that focus on the same problem.

Growick (1983) wrote about the use of computers in various areas of vocational rehabilitation, from counseling to training and education. His focus was the use of computers for both case management activities such as documentation and planning and data analysis of psychometric instruments and other evaluations. At that time the emergence of computer use in rehabilitation was focused on computer assisted instruction for consumers.

Since the Technology-Related Assistance for Individuals with Disabilities Act of 1998, the value of technology in enhancing the quality of life and employment opportunities for people with disabilities has been undisputed (Boland-Patterson, 2000). Perhaps the area of rehabilitation most enhanced by the use of personal computers is the area of assistive technology. Computers can be used to assist in ambulation for spinal cord injured persons, speech recognition for deaf persons, voice generation for individuals with communication disabilities and control of the environment for homebound individuals (Growick, 1983).

Just as the next 10 years will produce rapid expansion in distance learning, so we should expect it to produce incredible growth for persons with disabilities and their utilization of computer technology.

Students with reading disabilities will be able to use print-to-speech reading systems that enable them to keep pace with peers their age. Persons who are deaf will be able to use speech-to-text listening machines that convert in real time text or sign language. Finally, the decade's end will also signify the arrival of truly effective computer-controlled orthotic devices, allowing those with paraplegic disabilities to walk and climb stairs (Jones, 2000, p.17).

The computer has not only enhanced employment opportunities for individuals with disabilities, but serves as an essential component of the management information systems of most rehabilitation agencies (Boland-Patterson, 2000). Computer-based job matching systems allow the consumer to enter data about his/her skills, interests and job history. Responses are then compared to database of appropriate jobs (Backer, 1986). In addition, computer assisted learning systems, rehabilitation counseling software and cognitive rehabilitation systems can assist counselors provide better services and also allow consumers to explore vocational options on their own (Backer, 1986).

Vocational evaluation applications include individualized evaluation planning, structured interviews, psychological and work sample testing, job matching and report writing (Bordieri & Crimando, 1991). The area of assessment has seen prolific growth with the emergence of computer technology. Psychological and vocational assessments made the transition from pen and paper to machine at first by the help of computer added scoring. The MMPI, SCII and many other tests are now computerized, not only for scoring but also for interpretive reports (Backer, 1986.)

A number of advantages have been cited for these systems, including (a) flexibility in scheduling and reporting, (b) potential for computerized adaptive testing which would create an

individualized-although still reliable and valid-version of the test for each user, (c) innovative measurement, allowing the user to offer a free response rather than multiple-choice items and (d) increased staff productivity and minimal training costs, arising from the computer's "ability to store and retrieve large quantities of information, construct reporting formats and simplify their completion, and develop system pathways for decision-making purposes (Bordieri & Crimando, 1991).

Despite its convenience, many complications occur when a machine is introduced into a position where human judgment was once relied upon. The easy use and availability of test interpretations software could lead to abuse by individuals who lack training in test interpretation (Bordieri & Crimando, 1991). Furthermore, Bordieri and Crimando also site several possible problems associated with the reliance of computer technology for psychometric purposes in rehabilitation:

1. Although computer assisted testing systems allow for unsupervised testing of clients, this is not appropriate in most cases.
2. The measurement of aptitudes, interests, and so on may be confounded by computer skills or computer anxiety.
3. There is a possibility that a written version and computer version of the same test may not be measuring the same trait, or they may be confounded with individual memory.
4. The computer lacks insight into the knowledge of the client that the counselor has....[and] interprets test results as if all people are alike or as if they vary only slightly.

As more rehabilitation service providers obtain technology and use it for the provision of vocational services, issue of implementation, cost and administration will become very

important. Backer (1986) suggested setting goals and implementing a strategic plan for computerization. Suggestions for this plan included:

1. How will the computer systems be financed?
2. Will the systems be leased or purchased?
3. Where will the hardware be housed?
4. To what extent will the software need customization?
5. What staff persons (or others outside the agency) need to be involved in arranging system implementations?
6. What problems of staff resistance have to be overcome?
7. How will the new computer system interface with existing programs and resources?

The Internet and Rehabilitation

The Internet has the potential to greatly enhance the rehabilitation professional's effectiveness and efficiency in several areas through immediate access to assorted types of rehabilitation information: For example, vocational, medical, assessment information and job readiness tools (Boland-Patterson, 2000). Rather than looking through a database of possible jobs, consumers can now compare the skills, interests and abilities to actual jobs in the community. The Internet provides vocational evaluators with data such as job and wage trends and there are a multitude of private vendors that maintain job listings, resume listings and employer-job seeker matches.

Assessment information is also available to professionals and consumers via the Internet including The Career Key and The Career Interests Game (Boland-Patterson, 2000). Test publishers have commercial sites which vocational evaluators can review their offerings and

purchase materials. There are a great number of Internet sets that have tests online (Jackson, et. al, 1999).

The O*Net <http://www.doleta.gov/programs/onet> is occupational information retrievable by a computer connected to the Internet. It has reduced the DOT's 12,741 job titles into 1,172 occupations. The O*Net offers descriptors on worker knowledge, skills, abilities, work activities, job characteristics and labor market information. There are two methods of obtaining the viewer data, downloading it from the O*NET web page and it is also available on CD-ROM (Jackson, et. al, 1999). The O*Net is filled with information acquired by job analysts, about actual employers and workers. The O*Net also contains downloadable versions of their interest and work values test and can assist with some job search services, post interest or personality tests. Rehabilitation personnel have tremendous resources available to them on the Internet and will move into more online activity with the rest of the world in the next few years to come.

The changes in rehabilitation, technology and distance learning discussed in this chapter are having a significant impact on how training is delivered. An understanding of how community rehabilitation programs are diversifying in relation to these changes is important for the Continuing Education Center in offering quality training that is accessible to it's constituents as well as current. The results discussed in the next two chapters will have implications for the Center's distance learning and plans for future training directions.

CHAPTER III

METHODOLOGY

The purpose of this study was to determine the technology capacity of community-based rehabilitation programs in Region V and their ability to utilize distance learning through the Continuing Education Center at the University of Wisconsin-Stout. This chapter reports the methodology used to address the following research objectives:

1. Determine the number of computers and the hardware, software, and Internet capabilities within community-based organizations in Region V.
2. Identify technology disparities between states and among community-based organizations based on individuals served and revenue.
3. Determine access to other distance learning technologies (i.e., telephone conferencing systems, fax machines, videocassette recorders and videoconferencing systems).
4. Determine if administrators provide access to distance learning technologies for direct service practitioners.
5. Identify the anticipated investment community-based rehabilitation programs will make in distance learning technologies and training in Region V.

Populations and Sample

The population relevant to this study is community-based rehabilitation programs in Region V including Illinois, Indiana, Ohio, Michigan, Minnesota, and Wisconsin. The sample included CRPs in Region V on the mailing list from the Research and Training Center for Community-Based Rehabilitation Programs at the University of Wisconsin-Stout. The initial sample of rehabilitation programs contained the following number of organizations in each state: Illinois, 483; Indiana, 188; Ohio, 330; Michigan, 244; Minnesota, 158; and Wisconsin, 277.

Instrumentation

The survey was designed to ascertain the capacity of community-based rehabilitation programs to access distance learning and was comprised of seven main sections: (a) computer availability and capacity, (b) internet access, (c) access to distance learning for community-based staff, (d) anticipated use of distance learning, (e) CRP investment in technology and training, (f) pricing, and (g) demographics. This report does not include findings on anticipated use of distance learning options (Section IV) and pricing (Section VI).

Along with the survey, a cover letter was sent out to the administrators introducing the Continuing Education Center, explaining the purpose of the study, and describing the procedures. A second survey and cover letter was also used and differed from the first in the following areas:

1. Recipients could return the survey blank if they did not have time to participate, if the box at the top of the first page was checked.
2. Respondents had the option to only complete sections marked with an asterisk, eliminating sections 3, 4, and 6.
3. A second cover letter served as a reminder to participants.

Copies of the two versions of the questionnaire and cover letters are available in Appendix A.

Procedures

Data Collection

The collection of data occurred in two separate phases. The first phase included mailing 1,680 surveys and cover letters to the executive directors (along with a self-addressed stamped envelope) on September 13, 1999 with a return date of October 1, 1999. The second consisted of mailing to organizations that had not replied to the initial survey by October 1 and was conducted on October 15 with a November 1 return date. Again a follow-up letter, second survey (described above), and self-addressed, stamped envelope were included to facilitate response.

Return Rate

In Phase I, 1,680 surveys were distributed to the six different states and yielded 164 returns. In Phase II follow-up surveys were mailed to organizations that did not respond to the initial survey. Addresses were removed if the original mailing was returned because of an unknown address. A total of 153 surveys were returned during Phase II. The return rate was 18.9 percent.

Although the original database contained community-based rehabilitation organizations known to the Research and Training Center, respondents were asked to classify themselves to ensure the integrity of the sample. Subsequently 49 organizations either self-identified as non-CRPs or it was determined by the data submitted that they did not meet the criteria. In addition 43 declined to participate. The number of surveys used in the final analysis was 235 (13.9% response rate).

After both phases of the survey were completed, most organizations not included in the data pool were from one of the following: (a) rehabilitation hospitals, (b) state associations of

rehabilitation organizations, (c) residential service providers, and (d) other human service agencies.

Data Analysis

A database was created using Microsoft Access as the data entry tool. The data entry responsibilities were divided between the researcher and a graduate assistant working for the Continuing Education Center. Microsoft Access was also used to ensure the integrity of the data and make modifications to missing data by cross checking all variables with zeros against the original surveys to verify missing data. Data was then imported into SPSS for final analysis.

Initial frequencies were run by the researcher, checked for errors, and extremes were checked against the original survey to insure integrity for reported data. For organizations that were greatly out of proportion with the rest of the data, by questions, the rest of the outlier values were set in the item distribution equal to the next highest number. Example gross revenues above \$26 million were changed to equal \$26 million. Frequencies were again computed to check for other possible errors and missing outliers.

Overall frequencies and statistics were calculated using SPSS and the corrected data frequency, mean, median, standard deviation, range, minimum, and maximum were reported along with percentages of yes and no responses. These statistics were computed by state, organizational size, and annual revenue. Size was classified by total annual revenue and also average daily count. Classification by average daily consumer count were as follows: (a) less than 50, (b) 51-100, (c) 101-250, and (d) greater than 250. Classification by total annual revenue included: (a) < \$1 million, (b) \$1 million - \$5 million, (c) \$5 million - \$10 million, and (d) greater than \$10 million. The following reports how data were compiled to determine each objective.

Research Objective 1: Determine the number of computers and the hardware, software, and Internet capabilities within community-based organizations in Region V.

Data for this objective came from Section 1 (computer availability and capacity) and Section 2 (Internet access). Data were statistically analyzed in SPSS and mean, median and standard deviation computed along with percentages of reporting organizations using this type of technology. Percentages are based upon organizations reporting a value greater than 0 and dividing by the number of total respondents (235).

Research Objective 2: Identify technology disparities between states and among community-based organizations based on individuals served and revenue. Organizations were grouped on average daily count of consumers: (a) less than 50, (b) 51-100, (c) 101-250, and (d) greater than 251. Annual revenue was divided as follows: (a) less than \$1 million, (b) \$1 - \$5 million, (c) \$5 - \$10 million, and (d) greater than \$10 million. These categories are based upon industry standards from research of the University of Wisconsin-Stout. Mean, median and percentages computed for these categories were then reviewed for patterns and obvious differences.

Research Objective 3: Determine access to other distance learning technologies (e.g., telephone conferencing systems, fax machines, videocassette recorders and videoconferencing systems). This data was obtained from Section 3b of the survey. Organizations were asked to indicate (yes or no) whether they had any of the selected technologies. Yes/no responses were computed using SPSS to determine proportions by state that reported use of each technology.

Research Objective 4: Determine access to distance learning technologies for direct service practitioners. Information pertaining to this objective was obtained from Section 3a of the survey. Respondents reported how many computers with Internet connections and CD-ROM

were available for direct service staff training. Mean, medians and standard deviations were calculated. Mean number of computers available in organizations was compared to the mean number of direct service workers employed by the organizations, which provided a staff to technology ratio.

Research Objective 5: Identify the anticipated investment community-based rehabilitation programs will make in distance learning technologies and training in Region V. This objective came from Section 5, investment in technology and training. These data were then statistically analyzed using SPSS and mean, median and standard deviation were calculated by response. Again this was done by subtracting all zero frequencies from the total reporting for that variable and dividing by the total number of respondents (235).

Limitations

Discretion must be used when examining the mean numbers in this study due to the skewing effect of very large organizations in the sample. Medians are reported to offer additional information in light of this issue. It is possible that those individuals and organizations that have a better understanding and comfort level with technology may have been more likely to respond to this survey. The technical language of the survey may have also discouraged some from completing the survey resulting in incorrect responses. The low return rate would also be reason to use caution when generalizing these results.

CHAPTER IV

RESULTS

The purpose of this study is to identify the current level of technology within community-based rehabilitation programs in Region V that would allow them to access distance learning provided by the Continuing Education Center. This information will assist the development of delivery modalities, pricing structures, curriculum and support services. This chapter will report the findings from the study.

Demographic Characteristics of Sample

The typical organization participating in this study serves persons with disabilities, persons with severe disabilities, and persons with multiple disabilities (see Appendix B). They also have an annual revenue of \$4.6 million, serve 873.75 persons annually, and have an average daily consumer count of 189.91 (see Table 1). Additionally the typical organization has a total of 75 direct service staff members and 15.54 administrators and they add approximately 36 new staff every year. Illinois had the highest median average daily count, the highest median revenue (\$4.6 million), and the second highest mean count of new staff annually (63).

Table 1

General Demographic Information

States	Average Daily Count				Total New Staff Annually				Revenue (In Millions)			
	N	Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD
Illinois	31	202	147	192	26	63	25	79	24	6.7	4.6	6.6
Indiana	27	184	145	166	19	29	20	29	22	4.6	3.5	3.7
Michigan	19	183	100	208	18	9	8	9	19	5.8	2.6	7.1
Minnesota	24	235	72	263	21	11	18	5	19	4.1	1.1	4.4
Ohio	29	163	125	187	22	64	3.0	168	20	3.9	1.8	5.0
Wisconsin	40	139	75	133	33	25	3.0	103	34	3.0	1.2	5
Totals	170	873	210	2,132	139	36.27	7	94.16	138	4.6	2.4	5.5

Technology Capacity in the Region

Computer Capacity

The survey asked for the total number of computers in each organization (Table 2), as well as the number of computers owned and number to be added in the next six months with the following technical specifications: (a) processors, (b) operating systems, and (c) hardware components. These findings are reported on Table 3. The mean number of computers per CRP was 33.62 and a majority had at least 100 MHZ processors or faster and 50 percent of the organizations in the region had 16 computers or less. The distribution of the average number of machines among the states ranged from a mean of 27.73 machines in Wisconsin to 46.49 machines in Illinois. Indiana had the highest mean number of 100 MHZ or higher computers per organizations (34.5) and Michigan despite having the lowest mean number of computers, had the largest percentage of organizations with access to 100 MHZ or faster machines at 96.6 percent.

Almost all of the organizations in the region (95%) use a version of Microsoft Windows for their operating system. Additionally, 42 percent of organizations report having computers that use an older version of Windows. Only 22 organizations report they use Apple Macintosh machines (9.36%) and only 2 organizations planned on adding Macs, which is much fewer than the 217 organizations adding Windows 95/98/NT machines. Five organizations reported having machines using the Linux operating system. Microsoft Internet Explorer is the most widely used Internet browser with Netscape Navigator appearing in only 33 percent of the organizations. The number of computers with CD-ROM/DVD drives is plentiful with a mean of 18.53 computers per organization and 90

percent of total organizations reported having at least one computer with a CD-ROM/DVD drive.

Table 2
Computer Capacity

State	N	Mean	Median	Standard Deviation
Illinois	49	46.49	30	52.82
Indiana	31	41.23	20	53.19
Michigan	29	22.00	10.00	30.16
Minnesota	32	31.59	17	33.28
Ohio	41	29.76	17.0	32.35
Wisconsin	52	27.73	15	52.04
Region	234	33.62	16	45.15

Table 3

Computers by Processor, Operating System and Peripherals

Computer Capabilities	Current				Obtain in 6 Months				
	N	Mean per CRP	Median per CRP	SD	Percent Reporting Capacity	N	Mean per CRP	Median per CRP	SD
Processor									
486 or Lower	175	9.3	4	14.5	60	79	.3	0	1.5
100 MHZ or Higher	218	26.2	12	41.4	89.8	107	5.6	2	10.2
Operating System									
Windows 3.x	137	7.6	3	17.6	42.1	63	.2	0	.9
Windows 9x/NT	223	27.9	13	13	94.9	92	5.5	2	9.2
MAC OS	96	.9	0	2.7	9.4	59	.1	0	.6
Linux	86	8.14E-02	0	.4	2.1	54	5.56E-02	0	.3
Peripherals									
CD-ROM/DVD	223	18.5	10	29.8	90	99	4.9	2	8.6

Non-Computer Related Distance Learning Technologies

Most organizations reported access to VCRs (94.4%) and fax machines (80.5%) (see Table 4), while few had access to more sophisticated and expensive technologies such as videoconferencing equipment (7.5%) or computer projectors (24.2%). In addition, a majority of the respondents indicated they had a training room (61.1%), whereas only 11.4 percent of organizations had rooms set up for distance learning. Nine percent of reporting organizations indicate plans to add a distance learning room within the next six months.

Very small percentages of organizations had videoconferencing equipment on site and few had plans to obtain such equipment. The range of organizations across states that have access to these technologies can be found in Table 4b.

Currently non-computer related distance learning technology was most prominent in Michigan. Twenty percent of their organizations indicated they had a distance learning room and 17.4 percent of organizations in Michigan reported having videoconferencing systems. Very few organizations in any of the states reported they have any plans to add distance learning rooms or videoconferencing equipment. Over 12 percent of Illinois organizations indicated they would add a distance learning room and 20 percent of organizations in Indiana reported adding videoconferencing systems.

Table 4**Distance Learning Technology Availability**

	Number	Frequency	Percentage
Training Room Current	198	121	61.1
Training Room Obtain	90	7	7.8
Distance Learning Room Current	185	21	11.4
Distance Learning Room Obtain	100	9	9
Videoconferencing Equipment Current	186	14	7.5
Videoconferencing Equipment Obtain	101	6	5.9
VCR Current	213	201	94.4
VCR Obtain	84	2	2.4
Data Projector Current	186	45	24.2
Data Projector Obtain	136	10	10.1
Fax Machine Current	215	173	80.5
Fax Machine Obtain	142	93	39.6

Table 4b**Distance Learning Technology by State (Percentages)**

	IL	IN	MI	MN	OH	WI	Total
DL Room Have	11.8	4.5	20	14.8	5.9	2.3	11.4
DL Room Obtain	12.5	2	0	10	5.9	8.0	9.0
Videoconferencing Have	4.2	8.3	17.4	3.7	6.3	4.4	7.5
Videoconferencing Obtain	4.2	20	7.1	0	0	7.7	5.9

Internet Access

Organizations vary in the number of computers that are connected to the Internet, the speed at which they can connect, and how staff can access these computers for the purposes of training. Over 90 percent do have access to the Internet and many organizations in the region are adding computers with Internet access. However most of the machines are connected at slower rates using dial-up connections.

The median number of computers per organizations connected to the Internet using dial-up is much higher (3) than the median number of computers connected at high speeds (.5) (see Table 5).

The mean number of computers with high speed Internet connections offers a different look than the median. The mean number of computers connected to the Internet at high speed is twice as large (13.93) as the mean number of dial up machines (5.66). However, this is not representative of how organizations as a whole access the Internet in the region (see Table 5). Of the organizations reporting, 70.6 percent indicated they have computers that have dial-up access to the Internet whereas only 29.8 percent of organizations have computers with high speed access.

The number of computers per organization added with high speed Internet connections will grow over the next six months at approximately 3 machines per organizations which is very similar to the mean number of computers being added that have dial-up connections. Approximately 14 percent of the organizations report they will add computers with high speed access to the Internet which is also identical to the percentage of organizations that will also add computers with dial-up access to the Internet.

Table 5

Internet Connection Speed

	Current					Obtain in 6 Months				
	N	Mean	Median	SD	Percent Reporting Capacity	N	Mean	Median	SD	Percent Reporting Capacity
Dial up	188	5.7	3	9.2	70.6	80	2.3	3	5.0	14.9
High Speed	140	13.9	.5	34	29.8	78	3.7	0	7.9	14
Illinois	29	9.5	0	20	24	18	2.2	0	3.8	14
Indiana	16	40.4	2	65.7	31	7	2.7	2	3.7	7.8
Michigan	19	4.5	1	9	44.8	14	2.9	1	5.6	31
Minnesota	17	17.2	10	23.3	34.4	9	8.8	4	13	18.8
Ohio	26	5.5	0	12.3	21.7	10	.1	0	.3	2.4
Wisconsin	33	15.4	0	41.1	30.8	20	5.5	0	11	11.5

The distribution of organizations that have access to the Internet across states range by approximately 5 percent. Michigan had the highest percentage of organizations with access to the Internet at 93.1 percent and Indiana had the lowest with 87.1 percent. Indiana has the highest mean number of computers with high speed access to the Internet (40.44) and Michigan the lowest (4.47). Despite the low mean, Michigan has the highest percentage of organizations with current high speed access (44.8%) and the highest percentage of organizations planning to add computers connected at high speeds (31%).

Staff Access to Computers for Training

Organizations in Region V have a mean of 8.47 computers connected to the Internet which direct service staff can use for training. A mean of 11 computers with CD-ROM/DVD drives are available to staff. The mean number of direct service staff per organization is 74.97. Approximately 69 percent of organizations reported they had computers connected to the Internet for direct service staff training and 58 percent had computers with CD-ROM/DVD. Of the organizations that reported having such access for direct service staff, 56.5 percent reported having two or less computers connected to the Internet and 56.2 percent had five or less with CD-ROM/DVD drives available for staff training.

Technology and Training Budgets

The amount of money CRPs spend on computer technology and training varied greatly. The mean expenditure for technology during 1998 was \$19,611.41. Organizations planned on spending approximately \$1,600 less in the upcoming budget year. Approximately 50 percent of the organizations had a budget of \$8,000 dollars or less.

Spending on staff training for the year was less than technology. Mean budgeted amount for staff training per year was reported as \$11,205.45 with approximately \$1,400 less

budgeted for the upcoming year. Organizations in Illinois reported the largest mean technology budget (\$32,000), approximately three times as large as the smallest mean state budget (Minnesota). The mean expenditures on technology increased according to total revenue of the organization.

Table 6
Technology Budgets

Variables	1998				1999			
	N	Mean	Median	SD	N	Mean	Median	SD
State								
IL	29	\$32,313	\$15,000	\$41,409	19	\$26,184	\$10,000	\$46,340
IN	25	\$26,519	\$10,000	\$43,169	13	\$25,538	10,000	\$53,420
MI	17	\$21,282	\$8,000	\$29,170	15	\$29,773	\$6,000	\$47,578
MN	21	\$10,765	\$4,000	\$12,515	16	\$11,818	\$4,000	\$18,383
OH	23	\$16,869	\$5,000	\$41,239	17	\$12,470	\$1,000	\$36,693
WI	36	\$10,705	\$5,000	\$21,129	33	\$10,584	\$4,500	\$27,474
Gross Revenue (millions)								
<1	26	\$6,146	\$3,250	\$9,321	23	\$5,113	\$2,500	\$8,232
1 – 5	48	\$13,754	\$9,750	\$20,570	40	\$12,735	\$5,800	\$22,077
5 – 10	17	\$21,207	\$15,000	\$14,749	11	\$29,954	12,000	\$56,911
>10	16	\$70,393	\$45,000	\$65,796	12	\$74,333	\$45,000	\$71,222
Regional Averages	151	\$19,611	\$8,000	\$33,988	113	\$17,933	\$11,205	\$16,064

Table 7**Training Budgets**

State	N	1998			1999			
		Mean	Median	SD	N	Mean	Median	SD
IL	26	\$16,298	\$11,500	\$23,178	26	\$16,298	\$11,500	\$23,178
IN	25	\$18,641	\$6,000	\$29,730	14	\$8,178	\$1,750	\$12,304
MI	15	\$5,268	\$4,000	\$5,987	14	\$6,825	\$3,500	\$10,558
MN	21	\$14,004	\$8,000	\$17,241	16	\$17,861	\$10,000	\$21,416
OH	29	\$8,467	\$5,000	\$12,124	23	\$10,717	\$5,000	\$16,062
WI	39	\$5,848	\$2,800	\$8,877	36	\$6,588	\$2,850	\$10,769
Regional Totals and Averages	155	\$11,205	\$5,000	\$18,426	122	\$9833	\$3,250	\$16,064

Technology Access by Size

Size of the organizations was determined based upon average daily count of consumers served and total revenue. Organizations that had higher revenues and average daily count also had a higher mean number of computers in their organizations and also had a higher mean number of machines with the following; (a) 100 MHZ processors, (b) CD-ROM/DVD drives, (c) connections to the Internet, and (d) high speed connections to the Internet; all of which are significant for distance learning training (see Table 8).

Organizations with an average daily count of 251 or more consumers had a mean of 66.42 computers, which was more than twice the number for any other category. Additionally, 100 percent of the organizations in this category had computers with 100MHZ or faster

Table 8**Technology Access by Size of Organizations**

	Average Daily Count				Revenue (in millions)			
	< 50	51-100	101-250	>250	<\$1	\$1-\$5	\$5-\$10	>\$10
Number of Computers								
N	37	33	40	33	36	60	20	21
Mean	7.54	12.2	24.4	66.4	8.8	20.2	49.0	106.3
Median	5.0	9	21	44	5	17	39.5	100
SD	5.9	10.4	15.8	55.9	8	10.4	28.3	68.3
100 MHZ or Higher								
N	34	28	37	33	31	56	20	21
Mean	4.8	9.4	18.3	44.3	4.8	14.5	35.2	71.1
Median	3	5	14	30	3	12	26.5	40
SD	4.7	11.1	12.2	49.3	4.1	10.5	23.0	70.8
Percentage of CRPs	84	81	92	100	81	92	100	100
Internet Access								
N	32	32	38	33	37	59	20	21
Percentage of CRPs	84	87	95	100	78.4	96.6	100	100
High Speed Internet								
N	16	21	20	16	18		14	15
Mean	.75	12	4.85	5.31	2.1		12.8	40.53
Median	.0	3.9	0	3.5	.0		4.5	10
SD	2.4	7.6	10.2	5.2	5.1		17.0	62.4
Percentage of CRPs	7	30	92	45	17		40	42.9

processors, and access to the Internet. Only 7.9 percent of the organizations with an average daily count of less than 50 had high speed access to the Internet, whereas organizations with a daily average count of over 250 have the highest percentage of computers with high speed access to the Internet, 45 percent.

Similar trends were found in revenue categories. Organizations with higher revenues also had a higher mean numbers of computers, as well as faster computers and more computers connected to the Internet at high speeds. All organizations in the top two revenue categories reported Internet access and high mean number of computers with high speed connections to the Internet (40.53 per organization) was larger than the other three categories combined.

Unlike computer related technology, non-computer related technologies (e.g., fax machines, videoconferencing equipment) were not found predominantly in organizations with higher average daily consumer counts or higher average revenues (see Table 9). Organizations with an average daily count of less than 50 reported a higher percentage of organizations with basic technologies (e.g., fax machines), as well as a larger percentage with sophisticated videoconferencing. Only 80 percent of organizations with revenue exceeding \$10,000,000 reported fax machines in contrast to 94 percent of organizations with revenues from \$5,000,000 to \$10,000,000. None of the organizations with revenues from \$5,000,000 to \$10,000,000 report owning videoconference equipment, whereas those organizations in lower revenue categories report possessing videoconferencing equipment.

Table 9**Non-Computer Technology by Size of Organization**

	Average Daily Count				Revenue (in millions)			
	< 50	51 – 100	101 – 250	>250	<\$1	\$1-\$5	\$5-\$10	>\$10
Fax Machines								
N	31	23	29	26	22	54	16	16
Percent with	86.1	79.3	80.6	83.9	64.7	96.4	94.1	80.0
Videoconferencing								
N	5	1	2	1	3	1	0	3
Percent with	16.1	3.6	6.1	3.7	8.8	2.1	0	18.8

CHAPTER V

Overview

The purpose of this study was to determine the technological capacity of Community-Based Rehabilitation Programs in Region V that would allow access to distance learning.

The main research objectives included:

1. Determine the number of computers and the hardware, software, and internet capabilities within community-based organizations in Region V.
2. Identify technology disparities between states and among community-based organizations based on individuals served and revenue.
3. Determine access to other distance learning technologies (i.e., telephone conferencing systems, fax machines, videocassette recorders and videoconferencing systems).
4. Determine access to distance learning technologies for direct service practitioners.
5. Identify the anticipated investment community-based rehabilitation programs will make in distance learning technologies and training in Region V.

Information from this study will be used by the Continuing Education Center for Community-Based Rehabilitation Programs in Region V in the development of distance learning workshops and platforms.

Conclusions Based on Results

Research Objective 1: Determine the number of computers and the hardware, software, and Internet capabilities within community-based organizations in Region V.

This study found there is a broad and growing range of technology available in community-based rehabilitation programs. The typical organization in Region V has 34 computers and

all but one respondent indicated their organization had at least one computer. These numbers suggest that CRPs do understand the need for technology and if they already have computers in place in their organization, they may be more likely to become involved in distance learning.

Most of the computers in this sample are connected to the Internet using dial-up modems, have 100 MHZ processors or faster, use Windows 95/98 or Windows NT and also have CD/DVD drives. Internet Explorer (IE) is found more frequently than Netscape Navigator, which may be a misleading issue because IE is installed as the default on all Windows machines.

These specifications are important to design principles for distance learning. The creation of content for the world wide web must take into account the Internet browsers that are used to ensure access for all users. There may be times when the CEC must ask users to download plug-in or install additional software to access distance learning content and since an overwhelming majority of machines use the Windows platform, standardized software distribution becomes less difficult increasing the accessibility of distance learning. Additionally, the specifications on these computers seem to be adequate to access information typically available on the world wide web or that would be contained on a multi-media CD-ROM. These specifications will put CRP's in a good position to access distance learning offered by the Continuing Education Center.

However, there still remain a large number of organizations using much older computers and operating systems. The typical organization has an approximately 9.486 computers and approximately 7 machines still running Windows 3.1. Often these are the computers that fall into the hands of entry level direct service staff and have tremendous

functional limitations for distance learning. Alternatives must be offered for individuals that may access distance learning content with these machines. The CEC will have to consider text alternatives to multimedia to ensure that content is not lost in the sophisticated delivery. It is dangerous for designers to limit their offerings based on a small number of less sophisticated computers and it is suggested the majority of the development of new distance learning focus on the wealth of more powerful machines that exist in the Region.

Most organizations in this study have access to the Internet but are using a dial-up telephone based connections which have a much slower data transfer rate than the newer technologies, such as digital subscriber lines (DSL) and cable modems. This slower Internet connection speed makes larger files and multi-media information including audio and video much more difficult to access. The design of distance learning must offer low bandwidth alternatives to ensure universal access, which may include offering files compressed and streamed at different rates thereby sacrificing quality. Another alternative is to make the media files available on CD-ROM.

Research Objective 2: Identify technology disparities between states and among community-based organizations based on individuals served and revenue. The access and availability of technology is distributed well across the states. Discretion should be used when comparing these results because of the limited return rate and also because of the individual differences in the reporting organizations. It appears that Michigan has greater percentage of organizations with access to the following: computers with 100 MHZ processors or higher, high speed access to the Internet, and videoconferencing. However many states report a higher number of these technologies per organization.

There is a disparity in access to technology based on the revenue and number of consumers served by organizations. Larger organizations, across all of the computer categories, reported greater access to technology (i.e., based on mean numbers and percentage of organizations reporting). Larger organizations tended to have more computers, faster computers, more machines for staff training and faster Internet connections. These same organizations are adding computers with faster connections to the Internet more frequently than smaller organizations. It is suspected that the discrepancy in Internet bandwidth will continue to grow since more urban communities will have access to this technology than rural communities. This puts rural organizations in a tremendous disadvantage in accessing media and more sophisticated forms of distance learning including desktop video conferencing.

Despite the wealth of computer technology in these larger organizations there is no apparent pattern of access to non-computer technology. For example, the percentage of organizations with revenue over \$10 million that have fax machines is lower than the two preceding categories. Organizations with less than 50 consumers have greater access to video conferencing equipment and availability by revenue does not show significant variation. Because of the low number of respondents in these categories, the reader should be careful when making generalizations from this sample.

It is important for the CEC to continue to take advantage of the more advanced technologies that exists in larger organizations and in, states such as Michigan, to continue to expand the platform and move distance learning forward. These organizations provide opportunities for pilot testing advanced technologies and new pedagogical approaches to distance learning. It is suggested that these organizations, along with the CEC, create

partnerships and mentoring relationships to assist smaller less technologically sophisticated organizations move forward. Demonstration, training, and technical assistance can be used with organizations who have less technology, to provide a better understanding of the relevance and benefit technology can have in their organizations.

Research Objective 3: Determine access to other distance learning technologies (i.e., telephone conferencing systems, fax machines, videocassette recorders and videoconferencing systems). Non-computer related distance learning seems to be available in proportion to price and sophistication. Most organizations in the region have VCR's, fax machines, and overhead projectors for use in training. A small majority (61%) also have a specific room set aside for training. However, very few have set aside specific space for distance learning and only a handful plan to make that space available in the next six months. There are very few organizations that have the ability to participate in interactive videoconferencing from their organizations. This is most likely due to the cost of the hardware and the telecommunications infrastructure that must be in place. Additionally, the current cost of long distance telephone corrections can be prohibitive for many small businesses. As the price drops this may become a highly useful medium for training especially in large rural states such as Wisconsin and Michigan.

Videoconferencing is one of the most popular methods for technology based interaction, but cost is still prohibitive for common use. Many organizations that do obtain access to video conferencing and more sophisticated technologies often find that they are underused and outdated quickly. Accessing grant funding for organizations to partner and share these technologies could be one role of the CEC. It is suggested that those organizations with access to distance learning rooms and video conferencing equipment,

partner with other organizations to share costs. The need exists for long distance interaction that reduces travel, however the cost benefit is not evident and may be part of the reason for the low numbers.

Research Objective 4: Determine access to distance learning technologies for direct service practitioners. Although most organizations have multiple computers, the staff to computer ratio is very small and administrators will have to make providing access to the limited number of computers in each organization a priority. The typical organization has approximately 75 direct service staff and 16 administrative staff, which means access to computers for distance learning would have to be shared and scheduled.

The most common methods for distribution of computer-based distance learning are the Internet and CD-ROM. The typical organization has 11 computers with CD-ROM or and only 8 with Internet access available to direct service staff for use in training. This further limits the availability of distance learning technology to direct service staff considering the mean number of direct service staff in organizations.

Despite the low number of computers connected to the internet per staff ratio, on-line learning could play a significant training role. It is suggested that managers and administrators encourage direct service staff interested in distance learning to use computers outside the organizations (e.g. the library, technical college, home, cyber café). It is also suggested that this training time be paid and come with the same advantages as other forms of training that may take employees away from consumers and the work of rehabilitation.

Research Objective 5: Identify the anticipated investment community-based rehabilitation programs will make in distance learning technologies and training in Region V. Organizations budgeted a mean of \$19, 611 in 1998 for technology.. Considering

the mean gross revenue of the organizations is \$4.6 million, this seems to be a relatively small piece. As noted above, many of the organizations have a low computer to staff ratio and many have high numbers of older equipment. Adding to the low volume and lack of up-to-date technology is that organizations budgeted \$1,600 less for technology in the following year. It is suggested that further research be done to determine cost effective computer to staff ratios and to understand the typical budget considerations for companies in the private sector.

Organizations with larger revenues greater financial resources to purchase technology to access distance learning. This survey revealed that organizations with larger revenues did budget proportionately. The organizations in the lower two revenue brackets budgeted for less technology spending in the upcoming fiscal year, whereas larger organizations increased the technology spending for the upcoming fiscal year. This could potentially broaden the disparity of the organizations that already have access the better computer technology.

Closing Comments

Community-based rehabilitation programs should be encouraged by the results of this study. Only one organization indicated they did not have any computers and most report multiple computers in use. This is encouraging since a 1998 reported suggested that 30 percent of small business had no PCs (Parish & Beech, 1998). The broad use of the Windows operating system is also in keeping with industry trends. Microsoft windows has approximately an 87% share of PC operating systems (Hamn, 1999.)

A major concern for developers of distance learning is the access users have to higher speed Internet connections. Approximately 30 percent of the organizations in this study have access with cable, DSL or T1 lines which is an acceptable figure given the lack of

availability of this technology nationally. Currently only 65 percent of all cities with populations over 250,000 and less than 5 percent of towns of 10,000 or less have cable modems service. DSL service is primarily available in cities with over 25,000 people, in 56 percent of cities of 100,000 or more and in less than 5 percent of towns with 10,000 or less (US Department of Commerce, 2000).

Recommendations for Further Research

In order to make the comparison above more useful, it is suggested that further research be conducted to determine how community-based rehabilitation programs in Region V compare with other CRP's around the nation, other non-profit organizations, and with small business. This information could assist the Continuing Education Center build access platforms and possibly predict future trends. Follow-up should also be conducted in the region to see how trends over the past two years (since the survey) have impacted the technology in these organizations. Technology changes occur rapidly. By the time studies such as this are circulated, technology has changed and its findings may understate availability and capacity of CRPs to utilize distance learning technology. Given this precaution, the following recommendations are offered:

1. Focus on accessibility to distance learning and technology for persons with disabilities.
2. Attempt to make a more accurate determination of the percentage of organizations with access to computers with needed technical specifications and secondarily how many computers they have. This may reduce the missing data and give a better indication of percentage of machines available with the given specifications.

3. Explore issue of bandwidth more extensively. Bandwidth will become the largest issue related to the Internet in the next couple of years. Those who have high speed access to the Internet will have many more distance learning options available to them. Find out what type of high speed access they have.

4. Determine more specific information on CRP technology budgets, such as how much money is spent on licensing software, hardware, networking.

5. Assess the organizations web presence and any existing or potential moves towards e-commerce they may make and which may be a venue for promoting use of distance learning technology.

REFERENCES

- Backer, T. (1986). Rehabilitation and the computer: How to find what you need. In: H. J. (Ed.), Computer Technology/Special Education/Rehabilitation: Proceedings of the Conference . Northridge: California.
- Becker, M. (1999, January 1). As online courses increase, so do doubts about quality. Pacific Business News, 36, 26-33.
- Ben-Jacob, M. G., & Levin, D. S. (1998). Collaborative learning: A critical success factor in distance education. Proceedings from the 14th Annual Conference on Distance Teaching & Learning, (pp. 57-60). Madison: University of Wisconsin System.
- Bitter, J. A. (1994). Leadership training by distance. Journal of Rehabilitation Administration, 18, 81-86.
- Bitter, J. A. (1995). Technological resources for rehabilitation distance learning. Journal of Rehabilitation Administration, 19, 279-285
- Bitter, J. A. (1998). Distance learning considerations. Journal of Rehabilitation Administration, 22, 129-135.
- Bitter, J. A. (2000). Learner online interaction. Journal of Rehabilitation Administration, 24, 37-45.
- Blakemore, T., McCray, P., & Coker, C. (1984). A national survey of computer use in rehabilitation facilities. Menomonie, WI. Research and Training Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout.
- Boland-Patterson, J. (2000). Using the internet to facilitate the rehabilitation process. Journal of Rehabilitation, 66, 4-10.

- Botterbusch, K. F., & Miller, J. W. (1999). A survey of community-based rehabilitation programs: Goals, outcomes, consumers, finances and changes. Menomonie: WI: Research and Training Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout.
- Brooke, V., Sale, P., & Moon, S. (1990). An analysis of job duties performed by supported employment program managers. Rehabilitation Counseling Bulletin, 34, 53-59.
- Burgstahler, S. E. (1995). Distance learning and the information highway. Journal of Rehabilitation Administration, 19, 271-275.
- Charp, S. (1998). Distance learning. The Journal, 26, 4.
- Chepesiuk, R. (1998). Learning without walls. American Libraries, 29, 4-6.
- Clow, K. E. (1999). Interactive distance learning: Impact on student course evaluations. Journal of Marketing Education, 21, 97-107.
- Crimando, W., & Bordieri, J. E. (1991). Do computers make it better? Effects of source on students' perceptions of vocational evaluation report quality. Rehabilitation Counseling Bulletin, 34, 322-343.
- Decoteau, J. P. (1989, February). Transitional Employment Programs: A Comparison of Time-limited Adult Service Models and Components for Improving Employability. Paper presented to the University of Wisconsin-Stout Rehabilitation Research and Training Center Research Review Committee Meeting, Bloomington, Minnesota.
- Dowd, Lynn. (Ed.). (1993). Glossary of terminology for Vocational Assessment,

Evaluation and Work Adjustment. Menomonie: Materials Development Center, University of Wisconsin-Stout.

Dunn, P. (1990). Turnover among community-based practitioners: Reasons for leaving employment and proposed administrative solutions. Unpublished masters thesis, University of Wisconsin-Stout, Menomonie, Wisconsin.

Employment Program Managers. Rehabilitation Counseling Bulletin, 34, 53-60.

Eldredge, G., Gerard, G. & Smart, J. (1994). A distance education model for rehabilitation counseling. Journal of Rehabilitation Administration, 18, 75-79.

Farber, J. (1998). The third circle: On education and distance learning. Sociological Perspectives, 41, 797-814.

Ferguson, O. (2000, February 25). Battle for high-speed access market heats up. Computer Dealer News, 16, 1-4.

Gibson, C. C., & Gibson, T. L. (1995, September 1). Lessons learned from 100+ years of distance learning. Adult Learning, 7, 15.

Grossi, T. A., Test, D. W., & Keuf, P. K. (1991). Strategies for hiring, training and supervising job coaches. Journal of Rehabilitation, (57), 37-42.

Growick, B., (1983). Computers in Vocational Rehabilitation: Current Trends and Future Applications. Rehabilitation Research Review, 17. Washington, D.C.: Catholic Univ. of America, National Rehabilitation Information Center: National Council of Rehabilitation Education.

Gubernick, L., Ebeling, A. (1997). I got my degree through E-mail. Forbes, 159(12).

- Hamm, S. (1999, May, 24). One year later, it's the same old Microsoft. Business Week, 3630, 2-3.
- Hartley-Malivuk, T., & LeRoy, B. (1991). Supported employment staff training model. Journal of Rehabilitation, 57, 51-54.
- Hewitt, A. (1992, Spring). Direct service training: enhancing quality through core competencies. Impact, 5, 3.
- Hillesheim, G. (1999). The search for quality standards in distance learning. Proceedings of the 14th Annual Conference on Teaching and Distance Learning (165-172).
- Inman, E., & Kerwin, M. (1999). Instructor and student attitudes toward distance learning. Community College Journal of Research & Practice, 23, 581-681.
- Johnson, D., & Wallace, T. (Spring, 1992). Training Challenges for the 1990's. Impact, 5, 5.
- Jones, G. R. (2000). Partnering online. Journal of Rehabilitation Administration, 24, 13-24.
- Kearsley, G., & Moore, M. (1996). Distance education: a systems view. Washington: Wadsworth Publishing Company.
- Kessler, D., & Keefe, B. (1999). Going the distance. American School & University, 71, 44-47.
- Krietzberg, C.B., (1998, June 15). Internetweek, 719, 45-47.
- Krishnaswami, U., & Neubert, D. (1993). Training needs in vocational assessment and adjustment: organizational and occupational perspectives. Rehabilitation Counseling Bulletin, 36, 160-76.

- Larson, S. (Spring, 1992). A view from the inside: Direct service staff discuss core competencies. . Training for Impact 5, 7.
- Lebus-Heck, N. (1990). Training needs assessment for Wisconsin VEWAA. Unpublished master's thesis, University of Wisconsin-Stout, Menomonie, Wisconsin.
- Lee, C. (1998). Virtual U. Training, 35, 81.
- Long Distance Learning. (1998, September 7). InfoWorld, 20, 72-73.
- Lohman, J. S. (1998). Classrooms without walls: Three companies that took the plunge Training & Development, 52, 38-40.
- Mason, C. Y. (1985). Comments on Bitter. Journal of Rehabilitation Administration, 19, 287-289.
- McAlees, D., & Menz, F. (1995). Application for a Rehabilitation Services Administration Continuing Education Training Program. Menomonie, Wisconsin: Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout.
- McCray, P. M., & Blakemore, T. F. (1984). National directory of rehabilitation facilities using computers. Menomonie: University of Wisconsin-Stout, Research and Training Center.
- McDaniel, R. S., Lott, A., & Jackson, S. (1999, March). Internet, O*Net, and vocational evaluation. Paper presented at the Ninth National Forum on Issues in Vocational Assessment, New Orleans, Louisiana.
- McFarlane, F., Harrison, P., Saba, F., Bussell, L., & Turner, Jr., T. A., (1994). Region IX distance learning through telecommunications. Journal of Rehabilitation

- Administration, 18, 87-91.
- McKinnon, J. D. (1998). Faculty diss distance education. Community College Week, 11, 30-34.
- McLaren, B. M. (1995). Distance learning: Expanding educational opportunities. Journal of Rehabilitation Administration, 19, 261-267.
- Menz, F. E. (1987). An appraisal of trends in rehabilitation facilities: 1980 to 1984. Vocational Evaluation and Work Adjustment Bulletin, 20, 67-73.
- Menz, F. E., & Bordieri, J. E. (1997). Training experiences and perceptions of rehabilitation facility administrators. Journal of Rehabilitation Administration, 18, 60-68.
- Myers, D. E. (1992). Teaching learners of all ages. Music Educators, 79, 23-26.
- Nemec, P. B., McNamara, S., & McCarthy, H. (1998). Meeting our students face to face? Rehabilitation Education, 12, 361-365.
- Neubert, D. A., & Krishnaswami, U. (1992) Supported employment programs in Maryland: Personnel issues and training needs. Journal of Rehabilitation, 43-48.
- O'Brien, G. V., & Schiro-Geist, C. (1995). Implications of Australian distance education models for rehabilitation education. Journal of Rehabilitation Administration, 19, 315-321.
- Parrish, D. A., & Beech, W. M. (1998). Taking the initiative. Black Enterprise, 28, 1.
- Pelavin, D. (1987). National assessment of personnel shortages and training needs in vocational rehabilitation. U.S. District of Columbia: Pelavin Associates, INC. (ERIC Document Reproduction Service No. ED

311206.)

Phillips, M. R., & Peters, M. J., (1999). Targeting rural students with distance learning courses: A comparative study of determinant attributes and satisfaction levels.

Journal of Education for Business, 74, 351-356.

Piazza-Templeman, T., & Peters, J. (Spring, 1992). Training for impact.

Impact, 5, 6.

Rangecroft, M. (1998). Interpersonal communication in distance learning. Journal of

Education for Teaching, 24, 75.

Rehabilitation Service Administration. (1994). Report to the Congress of the United

States regarding fiscal year 1994 and 1885 rehabilitation training program

allocations. Washington, DC: U.S. Department of Education.

Smalley, K. A., Certo, N. J., & Goetz, L. (1997). Effect of a staff training package on increasing community integration for people with severe disabilities. Education

and Training in Mental Retardation and Developmental Disabilities, 37, 42-48.

Spooner, F., Jordan, L., Algozzine, B., & Spooner, M. (1999). Student ratings of instruction in distance learning and on-campus classes. Journal of Educational

Research, 92, 132-140.

Thyer, B. A., Artelt, T., Markward, M. K., & Dozier, C. D. (1998). Evaluating distance learning in social work education: A replication study. Journal of Social Work

Education, 34, 291-295. University of Illinois (1999, December). Teaching at an

Internet distance: The pedagogy of online teaching and learning. Champaign, IL.

Wehman, P., & Melia, R. (1985, April, May, June). The job coach: Function in

transitional and supported employment. American Rehabilitation, 11, 4-7.

- Wheeler, J. J. (1996). The use of interactive focus groups to aid in the identification of perceived service and support delivery needs of persons with developmental disabilities and their families. Education and Training in Mental Retardation and Development Disabilities, 31, 294-303.
- Winfield, W., Mealy, M., & Scheibel, P. (1999). Design considerations for enhancing confidence and participation in web based courses. Proceedings of the 14th Annual Conference on Teaching and Distance Learning (445-449).
- Wood, W. M., & Miller, K. (1998). Using distance learning to prepare supported employment professionals. Journal of Rehabilitation, 64, 48-54.
- Yee, J. A. (1998). Distance learning and community colleges. Community College Journal of Research & Practice, 22, 563-567.

APPENDIX A
Cover Letters and Surveys
of First and Second Mailings



University of Wisconsin-Stout

Menomonie, Wisconsin 54751-0790

Continuing Education Center
Stout Vocational Rehabilitation Institute
College of Human Development

September 13, 1999

Dear Facility Director,

We are writing to you today for two reasons: Share news with you about upcoming training opportunities and ask you to participate in a survey that may have direct bearing on your agency.

First, let us share with you news about some exciting training opportunities. The Continuing Education Center (CEC) at UW-Stout is offering distance learning training (i.e., Internet-based, teleconference, audio-conference) for direct service staff and other vocational and administration personnel.

We will initially focus on core knowledge and skills your staff (especially those in high turnover positions) needs in order to work effectively with persons with disabilities and/or others who have significant barriers to employment. The whole series will eventually be comparable to about 40 hours of in-service training.

Later, we will add modules and workshops covering high demand topics (e.g., wage and hour, staff retention, job coaching) and distance learning opportunities that sequence with seminar offerings, our in-service training package, and our technical assistance service.

We are quite excited about this new CEC venture as we believe it can help agencies like yours meet staff development needs. It will allow your staff to "get the basics," while minimizing time away from the job of rehabilitation. We are committed to helping you increase the level of skills of your rehabilitation staff and we believe distance learning can play an important role.

The second purpose of our writing you is to find out your specific technology capacity and likely utilization of this form of training. We are designing our marketing and distribution strategy to make this new option widely and economical to facilities across our region. Your responses to the attached questionnaire will provide us information to do this for your staff and agency.

Please complete the questionnaire and **return it to us by October 1, 1999**. Your completed questionnaire can be mailed in the enclosed envelope or faxed (715-232-5396).

If you do not see your agency using this form of training in the near future, the information on technology and your suggestions will help us understand agency capacity for this type of training. We are also equipped to make use of the responses to best target training opportunities to the equipment levels you have.

Thank you for your continuing interest in our services and products. We will be posting our findings on our Website (www.cec.uwstout.edu) and covering them briefly in an upcoming **CEC News**. We will, of course, continue to keep you posted on our distance learning announcements and of other training opportunities.

You can find additional information about our distance learning training opportunities at www.cec.uwstout.edu and then select the icon labeled ROLL (Rehabilitation On-Line Learning).

Sincerely,

Michael Olson
Distance Learning and Technical Assistance

Fredrick E. Menz, Ph.D.
Center Director

Enc: Questionnaire
Return Envelope

Availability of Technology and CRP Interest in Distance Learning Questionnaire

Instructions: This questionnaire poses questions about the availability of certain technology needed for providing your staff distance learning opportunities (both Internet and other formats). We also ask about your experience with and interest in making these alternative training methods available to your direct service staff. Data asked for are estimated counts.

Part I. Computer Availability and Capacity

Please provide counts for the following questions. If you have none, please place a zero in the box. If counts are not known place a question mark (?).

A. What is the number of personal computers (PCs/MACs) your organization has?	
---	--

B. How many of those computers have the following:		
Processor Speed	Number Currently Have	Obtain in Next 6 Months
486 or Lower		
100 MHZ Pentium or Higher		
Other (Please describe)		
Operating System	Number Currently Have	Obtain in Next 6 Months
Windows 3.1		
Windows 95/98/NT		
MAC OS		
Linux		
Other (Please describe)		
Hardware and Peripherals	Number Currently Have	Obtain in Next 6 Months
CD-ROM/DVD		
Modems		
Video Conferencing Camera for a PC		
Ethernet Cards		
Disability Access Features	Number Currently Have	Obtain in Next 6 Months
Input Devices (voice activation, accessible keyboards, etc.		
Alternative Output (Braille printers, screen readers, voice synthesis		
Adaptive Software		
Other (Please describe)		

Part II. Internet Access

A. Do you have computers with Internet access?	Yes	No
If Yes, continue below If No, skip to Part III		
B. Would staff in your organization be paid while participating?		
C. How many computers do you have that use the following to access the Internet?	Number Currently Have	Obtain in Next 6 Months
Dial up modems for Internet access		
High speed access to the Internet (Cable Modem, ISDN, DSL, T1/T3)		
Other		
D. How many computers have the following Internet browsers?	Number Currently Have	Obtain in Next 6 Months
Netscape Version 1.x or 2.x		
Netscape (Communicator) Version 3.x or Higher		
MS Internet Explorer Version 1.x or 2.x		
MS Internet Explorer Version 3.x or Higher		
America On-Line Browser		
Other (Please describe)		

Part III. Access to Distance Learning for Community-Based Staff

A. How many of your computers with the following would be accessible to direct service staff for training?	Number Currently Have	Obtain in Next 6 Months
Internet Access		
Intranet Access (local area network)		
CD ROM/DVD		
B. Which of the following do you presently have or plan to have in the next six months?	Currently Have (Yes/No)	Obtain in Next 6 Months (Yes/No)
A training room equipped for conventional training		
A training room equipped for distance learning		
Video Conference Equipment (i.e. Picture Tel)		
VCR Player		
DVD Player		
Overhead Projector		
Desktop/Computer Projector		
Fax Machine		

Part IV. Agencies Anticipated Use of Distance Learning Options

A. How many staff are or will participate in distance learning?		Currently	Obtain in Next 6 Months
Direct Staff			
Administrative			
Other			
B. Please estimate the number of staff you expect will be trained in the next 12 months under each format	Direct Service Staff	Administrative Staff	Total Staff
In-service at Agency			
Seminars (1-2 days)			
Workshops (2-4 hours)			
Conference (2-3 days)			
Internet (Basics)			
Internet (Advanced)			
Training on How to Use a Computer			
C. Which are best times for scheduling training for your staff? (Please rank from 1=Highest to 4=Lowest)	Rank		
Early Morning (before 9:00 a.m.)			
Lunch Time (12:00 – 1:00 p.m.)			
Later Afternoon (after 3:00 p.m.)			
Evening (after 5:00 p.m.)			
D. Are staff paid while participating in training? (Circle either Yes or No)	Yes	No	

Part V. Investment in Technology and Training

A. How much has your organization budgeted for each of the following items:	This Year	Next Year
Computers, Software and Peripherals	\$	\$
Training for Staff	\$	\$

Part VI. Alternate Pricing of Internet Training

The Continuing Education Center is exploring ways to deliver training economically and at the trainee's work-site. Therefore, we are exploring alternative packages to do this. We ask your opinion on which of the following would work for your organization. Please estimate a price your organization might pay for and the likely number of staff you would expect to have trained at that price. Rank each option as to how it would be best for your organization.

1 = Best option, 4 = Not worth considering.

<i>Option</i>	<i>Description of the Option</i>	<i>What organization would pay per year and number of staff who would be covered by the price</i>	<i>Rank</i>
Option A: Turn-Key Package	Equipment, training, technical support, CEC and CRP mentoring capability, with unlimited access to all Internet workshops for entry-level staff at this annual fee.	\$ / staff	
Option B: Staff Development Package	Similar to option A, but your organization has the equipment and would provide support to users. The CEC provides unlimited access to Internet workshops for entry level staff at this annual fee.	\$ / staff	
Option C: Training for Specific Number of Staff	Unlimited access to CEC Internet workshops for a specific number of entry level staff.	\$ / staff	
Option D: Pay Per Each Staff	Unlimited access to core Internet workshops for each entry level staff person.	\$ / staff	
Option E: In the space to the right please describe any other option you would like to see us offer and estimate its fair market price per staff.		\$ / staff	

Part VII. Respondent-Agency Demographics

Organization:		
Address:		
City:	State:	Zip:
Phone:	Fax:	
Email Address:		
<input type="checkbox"/> My organization does not have an Email address		
Website Address:		
<input type="checkbox"/> My organization does not have a Website address		

Part VIII. Organizational Demographic Information

Type of Organization

- Community-Based Rehabilitation Program/Facility/Psychological Center
- Other (please specify) _____

Primary Populations Served (Please check all that apply):

- | | |
|---|---|
| <input type="checkbox"/> Individuals with disabilities | <input type="checkbox"/> Immigrants |
| <input type="checkbox"/> Individuals with severe disabilities | <input type="checkbox"/> School-to-work transition (youth) |
| <input type="checkbox"/> Individuals with multiple disabilities | <input type="checkbox"/> Previously institutionalized persons |
| <input type="checkbox"/> Welfare recipients | <input type="checkbox"/> Public offenders |
| <input type="checkbox"/> Displaced workers | <input type="checkbox"/> Substance abuse |
| <input type="checkbox"/> Long-term unemployed | |

Unduplicated Count of Individuals Served in 1998 (Place count in each box)	Annual Totals	Average Daily Count

Total Number of Staff (Place count in each box)	Direct Service	Administrative	New Staff Annually

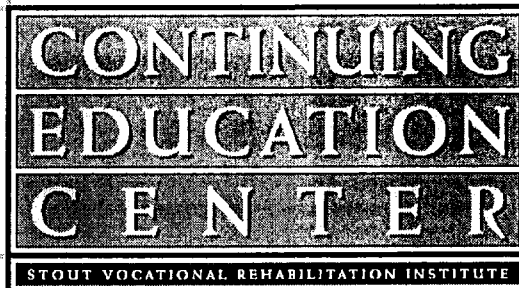
Revenue	Total Revenue for 1998

Thank you for taking the time to complete this questionnaire. Please fold and return it in the enclosed postage-paid envelope or you may address your own envelope to:

Michael Olson
Continuing Education Center for
Community-Based Rehabilitation Programs
University of Wisconsin-Stout
519 McCalmont EHS Building
Menomonie, WI 54751

We ask that you return it to us by **October 1, 1999**. If you prefer, you may fax it to my attention at 715-232-5396.

If you have any questions or comments, I may be reached by email at olsonmi@uwstout.edu or phone 715-232-1886. Thank you again!



Don't forget to check out our website:

www.cec.uwstout.edu



University of Wisconsin-Stout

Menomonie, Wisconsin 54751-0790

Continuing Education Center
Stout Vocational Rehabilitation Institute
College of Human Development

October 15, 1999

Dear Facility Director,

Approximately one month ago the Continuing Education Center wrote informing you of our distance learning activities and asked you to complete a survey regarding your current computer capacity and potential use of distance learning. We are following up as we have not as yet received your response.

Our distance learning opportunities allow persons working in community-based rehabilitation programs to receive training at anytime and anyplace. It is intended to provide your staff with needed skills reduce the time away from consumers, and help your staff use their time more effectively in the work of rehabilitation.

The information you provide on our survey is very important to the Continuing Education Center as we shape our Rehabilitation On-Line Learning (ROLL) Workshops and other training offerings.

Please return your completed survey to the Continuing Education Center in the enclosed self-addressed stamped envelope by November 1, 1999 or fax it at 715-232-5396.

If you have already returned your survey, please disregard this reminder.

If you have any questions regarding the use of this data or are interested in our distance learning opportunities, visit our website at www.cec.uwstout.edu, email us at cec@uwstout.edu, or call us at 715-232-1379. Thank you for participating.

Sincerely,

Michael Olson
Distance Learning and Technical Assistance

Fredrick E. Menz, Ph.D.
Center Director

Enc: Questionnaire
Return Envelope

**Availability of Technology
and CRP Interest in
Distance Learning
Questionnaire**

Please Return by November 1st

Instructions: This questionnaire poses questions about the availability of certain technology needed for providing your staff distance learning opportunities (both Internet and other formats). We also ask about your experience with and interest in making these alternative training methods available to your direct service staff. Data asked for are estimated counts.

If you are short of time we would appreciate it if you would fill in those items that are preceded with two asterisks(**).

I am unable to participate at this time.

Part I. Computer Availability and Capacity

Please provide counts for the following questions. If you have none, please place a zero in the box. If counts are not known, place a question mark (?).

** A. Number of personal computers (PCs/MACs) your organization has?		
** B. How many of those computers have the following:		
** Processor Speed	Number Currently Have	Obtain in Next 6 Months
486 or Lower		
100 MHZ Pentium or Higher		
** Operating System	Number Currently Have	Obtain in Next 6 Months
Windows 3.1		
Windows 95/98/NT		
MAC OS		
Linux		
Other (Please describe)		
** Hardware and Peripherals	Number Currently Have	Obtain in Next 6 Months
CD-ROM/DVD		
Modems		
Video Conferencing Camera for a PC		
Ethernet Cards		
Disability Access Features	Number Currently Have	Obtain in Next 6 Months
Input Devices (voice activation, accessible keyboards, etc.)		
Alternative Output (Braille printers, screen readers, voice synthesis)		
Adaptive Software		
Other (Please describe)		

Part II. Internet Access

**A. Do you have computers with Internet access?	Yes	No
If Yes, continue below If No, skip to Part III		
**B. How many computers do you have that use the following to access the Internet?	Number Currently Have	Obtain in Next 6 Months
Dial up modems for Internet access		
High speed access to the Internet (Cable Modem, ISDN, DSL, T1/T3)		
Other		
C. How many computers have the following Internet browsers?	Number Currently Have	Obtain in Next 6 Months
Netscape Version 1.x or 2.x		
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America On-Line Browser		
Other (Please describe)		

Part III. Access to Distance Learning for Community-Based Staff

A. How many of your computers with the following would be accessible to direct service staff for training?	Number Currently Have	Obtain in Next 6 Months
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CD ROM/DVD		
B. Which of the following do you presently have or plan to have in the next six months?	Currently Have (Yes/No)	Obtain in Next 6 Months (Yes/No)
A training room equipped for conventional training		
A training room equipped for distance learning		
Video Conference Equipment (i.e. Picture Tel)		
VCR Player		
DVD Player		
Overhead Projector		
Desktop/Computer Projector		
Fax Machine		

Part IV. Agencies Anticipated Use of Distance Learning Options

A. How many staff are or will participate in distance learning?		Currently	Obtain in Next 6 Months
Direct Staff			
Administrative			
Other			
B. Please estimate the number of staff you expect will be trained in the next 12 months under each format	Direct Service Staff	Administrative Staff	Total Staff
In-service at Agency			
Seminars (1-2 days)			
Workshops (2-4 hours)			
Conference (2-3 days)			
Internet (Basics)			
Internet (Advanced)			
Training on How to Use a Computer			
C. Which are best times for scheduling training for your staff? (Please rank from 1=Highest to 4=Lowest)	Rank		
Early Morning (before 9:00 a.m.)			
Lunch Time (12:00 – 1:00 p.m.)			
Later Afternoon (after 3:00 p.m.)			
Evening (after 5:00 p.m.)			
D. Are staff paid while participating in training? (Circle either Yes or No)	Yes	No	

Part V. Investment in Technology and Training

** A. How much has your organization budgeted for each of the following items:	This Year	Next Year
Computers, Software and Peripherals	\$	\$
Training for Staff	\$	\$

Part VI. Alternate Pricing of Internet Training

The Continuing Education Center is exploring ways to deliver training economically and at the trainee's work-site. Therefore, we are exploring alternative packages to do this. We ask your opinion on which of the following would work for your organization. Please estimate a price your organization might pay for and the likely number of staff you would expect to have trained at that price. Rank each option as to how it would be best for your organization.

1 = Best option, 4 = Not worth considering.

<i>Option</i>	<i>Description of the Option</i>	<i>What organization would pay per year and number of staff who would be covered by the price</i>	<i>Rank</i>
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Option B: Staff Development Package	Similar to option A, but your organization has the equipment and would provide support to users. The CEC provides unlimited access to Internet workshops for entry level staff at this annual fee.	\$ / staff	
Option C: Training for Specific Number of Staff	Unlimited access to CEC Internet workshops for a specific number of entry level staff.	\$ / staff	
Option D: Pay Per Each Staff	Unlimited access to core Internet workshops for each entry level staff person.	\$ / staff	
Option E: In the space to the right please describe any other option you would like to see us offer and estimate its fair market price per staff.		\$ / staff	

Part VII. Respondent-Agency Demographics

Organization:		
Address:		
City:	State:	Zip:
Phone:	Fax:	
Email Address:		
<input type="checkbox"/> My organization does not have an Email address		
Website Address:		
<input type="checkbox"/> My organization does not have a Website address		

Part VIII. Organizational Demographic Information

**** Type of Organization**

- Community-Based Rehabilitation Program/Facility/Psychological Center
- Other (please specify) _____

**** Primary Populations Served (Please check all that apply):**

- | | |
|--|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> Individuals with disabilities <input type="checkbox"/> Individuals with severe disabilities <input type="checkbox"/> Individuals with multiple disabilities <input type="checkbox"/> Welfare recipients <input type="checkbox"/> Displaced workers <input type="checkbox"/> Long-term unemployed | <ul style="list-style-type: none"> <input type="checkbox"/> Immigrants <input type="checkbox"/> School-to-work transition (youth) <input type="checkbox"/> Previously institutionalized persons <input type="checkbox"/> Public offenders <input type="checkbox"/> Substance abuse |
|--|---|

** Unduplicated Count of Individuals Served in 1998 (Place count in each box)	Annual Totals	Average Daily Count

** Total Number of Staff (Place count in each box)	Direct Service	Administrative	New Staff Annually

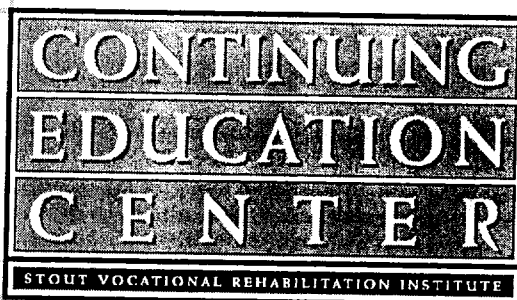
** Revenue	Total Revenue for 1998

Thank you for taking the time to complete this questionnaire. Please fold and return it in the enclosed postage-paid envelope or you may address your own envelope to:

Michael Olson
Continuing Education Center for
Community-Based Rehabilitation Programs
University of Wisconsin-Stout
519 McCalmont EHS Building
Menomonie, WI 54751

We ask that you return it to us by **November 1, 1999**. If you prefer, you may fax it to my attention at 715-232-5396.

If you have any questions or comments, I may be reached by email at olsonmi@uwstout.edu or phone 715-232-1886. Thank you again!



Don't forget to check out our website:

www.cec.uwstout.edu

APPENDIX B
Additional Tables

Primary Populations Served

Population	Number	Percentage of Total
Individuals with Disabilities	184	78.29%
Individuals with Severe Disabilities	145	61.72%
Individuals with Multiple Disabilities	137	58.29%
Welfare recipients	69	29.36%
Displaced Workers	23	9.78%
Long-term Unemployment	21	8.93%
Immigrants	16	6.80%
School-to-work transition	12	5.11%
Previously institutionalized individuals	11	4.68%
Public Offenders	7	2.98%
Substance Abuse	6	2.55%

Demographic Outliers and Changes

Variable	Actual Data	Now Equals
Revenue	105,458,000	26,000,000
	210,000,000	26,000,000
Annual Count	25,000	14,000
Daily Average Count	1200	800
	1500	800
	2000	800
Total New Staff	1500	600

Changes in the outliers for technological capacity

Variable	Actual Data	Now Equals
Number of Computers	800	250
	1000	250
486 or lower current	145	75
	400	75
Variable	Actual Data	Now Equals
100 MHZ or higher current	600	250
	790	250
100 MHZ or higher obtain	88	50
	94	50
Windows 3.x current	109	91
	165	91
Windows 9x/NT current	790	250
	1000	250
Windows 9x/NT obtain	50	39
	94	39
CD-ROM/DVD current	300	200
	650	200
CD-ROM/DVD obtain	50	39
	94	39
Dial up Internet Access Current	225	63
High Speed Internet Access Current	400	170

	770	170
Internet Access for staff training	150	88
	225	88
	750	88
CD-ROM/DVD for staff training	150	70
	156	70
Variable	Actual Data	Now Equals
	200	70
	650	70
Budget for Computers and software this year	300,000	200,000
Budget for computers and software next year	275,000	200,000

Average Daily Count breakdown

State	<50	51 - 100	101 - 250	>251
Illinois	7	4	7	8
Indiana	7	2	10	5
Michigan	4	6	3	5
Minnesota	5	7	1	7
Ohio	8	1	10	4
Wisconsin	7	13	9	4

Total	38	33	40	33
Percentage of Total	26.4%	22.9%	27.8%	22.9%

Table 4.

Revenue Categoris by state (in millions)

State	< \$1	\$1 – \$5	\$5 – \$10	>\$10
Illinois	5	7	6	6
Indiana	2	13	4	3
Michigan	2	13	0	4
Minnesota	8	3	6	2
Ohio	6	9	2	3
Wisconsin	14	15	2	3
Total	37	60	20	21
Percentage of Total	26.81%	43.48%	14.92%	15.22%