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ABSTRACT

These twelve issues (3 years) of the newsletter of the National Center for the Dissemination of Disability Research (NCDDR) present articles summarizing outcomes of National Institute on Disability and Rehabilitation Research (NIDRR) research projects. Articles from Volume 1 include: "What Are the True Outcomes of Research"; "Self Assessment Fosters Dissemination"; "User-Friendly Materials Facilitate Communication"; "Technical Assistance and Training Available for Grantees"; "Strategies for Underserved Groups"; "Availability versus Accessibility"; "Alternate Formats and Accessibility"; "Do You Have a Dissemination Policy?"; "Choosing a Primary Format"; "NCDDR World Wide Web Site"; "Dissemination Patterns of NIDRR Grantees"; "Dissemination Indicators"; "Characteristics of Current NIDRR Grantees: Initial Findings"; "NIDRR Grantees Receive Recognition"; "Literature Review on Dissemination and Utilization of Research Results"; "Literature Can Advise Practice"; and "Guides to Improving Practice." Articles from Volume 2 include: "Accessible Information on the World Wide Web"; "The Internet"; "General Guidelines for Improving Accessibility of World Wide Web Pages"; "Accessibility Design Considerations and Examples"; "Annotated WWW Resource List"; "Dissemination Evaluation Strategies and Options"; "You Can Evaluate Your Dissemination Efforts"; "Dissemination Self-Inventory"; "Thinking about Your WWW Site: Can It be Evaluated?"; "Model Spinal Cord Injury System WWW Gateway"; "Gateways to NIDRR's Disability Research"; "Assessing the Communication Power of Your WWW Site"; NIDRR Grantees and Staff Receive Recognition"; "How Do Consumers Get Information They Can Use?"; and "Is Disability Research Useful?" Articles from Volume 3 include: "Common Characteristics of NIDRR Grantees' Websites"; "How Do You Measure Success?"; "Trends in Dissemination Patterns of NIDRR Grantees"; "How Do Stakeholders Find and Disseminate Information?"; "Surveying for Dissemination Characteristics"; "NIDRR Grantees and Staff Receive Recognition"; "Who Needs Web Site Accessibility?"; "Electronic Accessibility"; "Interactive Elements of the Internet"; "NIDRR Grantees Offer Listservs"; "Update on Strategies for Web Accessibility"; "New Review of

NIDRR Grantees' Web Sites"; "Annotated WWW Resource List"; "The Unemployment of Americans with Disabilities"; "Collaboration in NIDRR's Employment Research"; "The Employment Emphasis in NIDRR's Proposed Long-Range Plan"; "The Federal Initiative To Increase Employment of People with Disabilities"; "The New Employment-Focused RRTCs [Rehabilitation Research and Training Centers]"; and "The Dissemination and Utilization Process and Employment Research." (DB)

The Research Exchange.

Quarterly Newsletter of the National Center for the Dissemination of Disability Research (NCDDR).

Volume 1, Numbers 1-4, Fall 1995-Summer 1996
Volume 2, Numbers 1-4, 1997
Volume 3, Numbers 1-4, 1998

NCDDR

NATIONAL CENTER FOR THE DISSEMINATION OF DISABILITY RESEARCH

NCDDR

National Center for the Dissemination of Disability Research

Dear NIDRR Grantee,

The Southwest Educational Development Laboratory (SEDL) is pleased to announce the initiation of a new NIDRR grant effort, the National Center for the Dissemination of Disability Research. (NCDDR). This communication represents the inaugural issue of the NCDDR's quarterly newsletter, *The Research Exchange*, that you will be receiving as a NIDRR grantee. The intent of these quarterly communications with you is to promote creative thought and options in the dissemination of research results and other related project outcome information.

The NCDDR staff will contact you concerning your desired accessible format for future newsletters. The NCDDR staff are excited about the new information and resources that the project will be able to provide to you and your NIDRR project staff.

Sincerely,

John D. Westbrook, Ph.D.
Director

SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY **SEDL | NIDRR** NATIONAL INSTITUTE ON DISABILITY AND REHABILITATION RESEARCH

NCDDR

THE RESEARCH EXCHANGE

NATIONAL CENTER FOR THE DISSEMINATION OF DISABILITY RESEARCH

VOLUME I, NUMBER 1 FALL, 1995

CONTENTS

The Research Exchange, a newsletter to promote the effective dissemination and utilization of disability research outcomes, is published quarterly by the National Center for the Dissemination of Disability Research (NCDDR) which is operated by the Southwest Educational Development Laboratory (SEDL). Neither SEDL nor the NCDDR discriminate on the basis of age, sex, color, creed, religion, national origin, sexual orientation, marital or veteran status, or the presence of a disability.

 The contents of this newsletter were developed under a grant (#H133D50016) from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education. However, these contents do not necessarily represent the policy of SEDL, NIDRR, or the Department of Education; do not assume endorsement by the Federal Government. For questions, comments, or to request this newsletter in alternate formats, contact:

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The Research Exchange VOLUME 1, NUMBER 1

OVERVIEW OF NCDDR

The NCDDR seeks to accomplish two major goals: (1) ensure the widespread dissemination and utilization (D & U) of research outcomes resulting from NIDRR research projects, and (2) increase the capacity of researchers to identify and use development and dissemination strategies that meet the needs of their target audiences.

To accomplish these goals the NCDDR will use a variety of strategies that are designed to assist NIDRR grantees. A sample of these include:

- ★ conduct a survey-based market analysis to describe major D & U characteristics of various target audiences
- ★ develop user-friendly written guides, pamphlets, and other materials to facilitate understanding of what is known about effective information dissemination
- ★ develop self-assessment instrumentation to foster calculation of a grant's "dissemination quotient"
- ★ plan and conduct a variety of training events for NIDRR grantees in selected D & U areas
- ★ develop and share periodic communications such as the NCDDR newsletter, *The Research Exchange*, via user-preferred accessible formats and modes
- ★ identify outcomes of NIDRR-funded projects that are in need of further dissemination and implement activities to expand awareness and use of NIDRR grantees' outcomes
- ★ describe the influence of culture on dissemination of information, and develop strategies to meet the information dissemination needs of identified racial or ethnic minority groups

The NCDDR's challenge is to make the grantee's research outcomes as clear as possible.

This is an age of expanding information. The NCDDR's challenge is to make the grantees' research outcomes as clear as possible. And, to couple that message with an effective dissemination strategy that targets all potential users of the research. ★

NCDDR

A WORD FROM THE DIRECTOR

WHAT ARE THE TRUE OUTCOMES OF RESEARCH?

The NCDDR will assist NIDRR grantees in identifying research outcomes that can benefit their target audiences. As has been clearly shown from research (Fuhrman, 1994; Leung, 1992), different perspectives about research exist between researchers and potential consumers of research information. The difference in perception carries over to an identification of research outcomes. These differences have served in the past to segregate the potential, ultimate beneficiary of research from the researcher in the critical steps of research design planning, implementation, data analysis, and reporting of findings. What is important or significant to the researcher, often, is different from what many "users" would consider "usable" or important.

For this reason, the identification of research outcomes may seem, on its surface, almost automatic, but for the purposes of D & U may not be obvious. The NCDDR's activities will be performed in a manner that assumes research outcomes are not conference presentations, journal articles, monographs, or other common "product" formats. The NCDDR will perform its activities assuming that NIDRR research outcomes are such things as: ideas, policies, treatments, interventions, exemplary programs, assistive technologies, and adaptive devices. This approach to describing research outcomes should assist in making an effective bridge between the perceptions of researcher and user. In addition, this orientation can help improve the communication between the researcher and the user so that each can benefit more fully from the sharing of their respective knowledge. ⋆

The NCDDR will perform its activities assuming that NIDRR research outcomes are such things as: ideas, policies, treatments, interventions, exemplary programs, assistive technologies, and adaptive devices.

Sources:

Fuhrman, S. (1994) Uniting producers and consumers: Challenges in creating and utilizing educational research and development. In Tomlinson & Tomlinson (eds.) *Education research and reform: An international perspective* (pp. 133-147). Washington, D.C.: U.S. Department of Education.

Leung, P. (1992) Translation of knowledge into practice. In Walcott & Associates, *NIDRR National CRP Panel Final Report.* Washington, D.C.: U.S. Department of Education.

SELF-ASSESSMENT FOSTERS DISSEMINATION

How can researchers determine if their dissemination practices are effective? The NCDDR will develop a self-assessment D & U inventory to help NIDRR research projects assess their current dissemination efforts and identify dissemination strategies that may be more effective. The significant research literature concerning D & U will serve as the basis for developing descriptors or characteristics that promote effective dissemination.

Basic areas in the analysis of NIDRR research outcomes for dissemination include the research focus, research design, target audience, and intended research outcomes. Other important considerations are the power or impact of research outcomes and the previous uses of those outcomes.

The inventory will examine innovativeness in consumer involvement throughout the research process. The self-assessment inventory will incorporate the major elements of dissemination: the message, source, context, audience, and medium. It can be used by:

- ★ NIDRR research projects as a self-administered diagnostic tool to develop plans for the improvement of their dissemination efforts
- ★ NCDDR staff or staff associates in onsite consultations focused on improving the link between NIDRR research projects and their potential users
- ★ individuals engaged in designing disability research to maximize the potential for utilization of their research outcomes

The inventory will examine innovativeness in consumer involvement throughout the research process.

The self-assessment inventory will be pilot-tested with disability research groups representing different NIDRR program areas. This process will help determine the degree to which the instrument can serve as a self-directed assessment, as well as its appropriateness for collecting the expected data.

The NCDDR will provide technical assistance in the use of the self-assessment inventory to all interested NIDRR projects. ★

NCDDR

USER-FRIENDLY MATERIALS FACILITATE COMMUNICATION

The NCDDR will develop user-friendly written guides, pamphlets and periodic communications in addition to this quarterly newsletter. All technical assistance materials developed by the NCDDR will be available in a variety of accessible formats.

Typical formats include paper (regular and large print), electronic data, Braille, CD-ROM, and audio. However, NCDDR staff recognize that accessibility is determined by the user, not the originator of the information. If additional formats are requested, every effort will be made to create the information in the requested format. Each format will be available through various modes of distribution. Examples of distribution modes include U. S. mail, facsimile machine transmission (FAX), telephone or text telephone, computer diskette, and audiotape.

One of the most exciting means of distribution that NCDDR will be using is the Internet. The NCDDR Web site has the URL http://www.ncddr.org/ The Internet location will serve many purposes such as access to this quarterly newsletter, summaries of project findings, and examples of new and innovative products resulting from NIDRR-funded research. Also planned are informative and challenging interactive sessions that will allow participants to exchange thoughts, ideas, issues and concerns that can only enhance future directions and outcomes of disability research.

The NCCDR Web site has the URL http://www.ncddr.org/

Utilizing these approaches to accessibility for target audiences, NCDDR staff will develop a series of four guides designed to assist NIDRR grantees in assessing their dissemination activities and planning improvements.

The first guide will provide an introduction to issues and concerns about dissemination and highlight ways that research outcomes are used by particular target audiences. The second guide will define dissemination as a complex process that begins at the earliest stages of planning and development, not

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after the completion of a research project.

Dissemination also extends beyond mere distribution of information to facilitating the use of research outcomes. The third guide will outline the principal elements of dissemination: the message, its source, its context, its target audiences, and media used in reaching those target audiences. Finally, the fourth guide will focus on dissemination media and formats. The guide will address issues of availability and accessibility, provide strategies for matching target audiences with their preferred information channels and discuss cost-effective approaches to distribute information in accessible formats.

The guide will also explore the latest in electronic media that can be used to reach target audiences. ⋆

Panels Planned for Nomination Process

On a pilot project basis, the NCDDR will implement a system to solicit nominations from NIDRR grantees, people with disabilities and their families, direct disability service providers, independent living center staff, and others to identify NIDRR project research and other outcomes considered useful for further dissemination. Nominations and associated materials will be reviewed by special-purpose panels selected for their expertise in areas reflected by the nominations.

Outcomes selected become the subject of a dissemination planning process that targets specific audiences and mechanisms for further dissemination of each outcome. NCDDR staff and grantees originating the outcome will work on a cooperative basis to implement the dissemination plan.

In some cases, the NCDDR staff will convene a focus group of nationally-recognized dissemination experts to suggest new and innovative ways to gain visibility and use of sets of selected NIDRR grant outcomes. ⋆

John Westbrook, Director of the NCDDR and the Special Education and Rehabilitation Services Program, has been with the Southwest Educational Development Laboratory (SEDL) since 1982. A recent project, the Regional Rehabilitation Exchange, began a national movement towards the development of a regional information exchange network. Before coming to SEDL, he served as a consultant and a staff development specialist for several state agencies and worked as a teacher/coordinator at the Texas School for the Deaf. He holds three degrees from The University of Texas at Austin: a B.S. in Speech with a major in Education of the Deaf/Hearing Impaired, an M.S. in Special Education with a major in Language/Learning Disorders, and a Ph.D. in Educational Administration with a major in Special Education Administration. His current interests include strategies for the effective dissemination and utilization of disability-related information.

Lin Harris, Information Services Technician, has been with the Special Education and Rehabilitation Services Program at SEDL since 1987. She also worked as an Administrative Assistant for the Resources for School Improvement group in SEDL's regional educational laboratory. Ms. Harris is an

interpreter for the hearing impaired. Before coming to SEDL, she worked as interpreter coordinator for a three-campus junior college, sign language instructor, and then as a secretary and vocational communication specialist for the Texas Rehabilitation Commission. Her current interests include accessible formats for informational materials and the management of multiple and interrelated databases.

MEET...

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Mary Kay Sanders, Dissemination Specialist,began working at SEDL in 1995. Before coming to SEDL, she was an Education Specialist II with the Texas Education Agency on the Texas Collaborative Transition Project, a Program Specialist with Advocacy, Inc. on the Texas Transition Task Force, and a Program Coordinator for

Independent Living Skills Training with the San Antonio Independent Living Services. She also worked as a secondary education classroom teacher in East Texas schools for ten years. Ms. Sanders' education includes a B.S. and M.A. with majors in history and English from Stephen F. Austin State University in Nacogdoches, Texas. Her current interests include effective transition planning for students with disabilities and independent living issues for all persons with disabilities.

Joann Starks, Research Specialist, began working at SEDL in 1995. Currently a doctoral candidate at The University of Texas at Austin in Special Education Administration, with an emphasis in Bilingual Special Education, she completed an internship at the National Association of State Directors of Special Education (NASDSE). Ms. Starks worked with Title VII-funded centers at the University of Colorado at Boulder and the University of New Mexico before returning to graduate school. She also worked in a community development project in San José, Costa Rica. Ms. Starks holds a B.A. in Sociology and a Master of Arts in Social / Multicultural Foundations of Education (Bilingual Education) from the University of Colorado at Boulder. Her current interests include state policies for language-minority students with disabilities, the Internet and other electronic dissemination information systems.

THE STAFF

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NCDDR

TECHNICAL ASSISTANCE AND TRAINING AVAILABLE FOR GRANTEES

Technical assistance activities of the NCDDR will include provision of materials, telephone conversations, linkages with appropriate resources, onsite consultations, and training sessions on principles and strategies for effective dissemination. The NCDDR maintains a toll-free hotline to facilitate voluntary, confidential, and responsive technical assistance.

Online interactive forms of technical assistance will be available to NIDRR grantees via the Internet. The NCDDR will establish an Internet information system for questions and responses from staff and others. NCDDR staff will establish interactive groups to allow NIDRR grantees to talk with staff and each other to explore issues related to the utilization of research outcomes.

NCDDR staff will be available, upon request by the grantee, to conduct onsite assessments and problem-solving for dissemination and utilization efforts, profile relative strengths/weaknesses and itemize potential strategies to improve dissemination.

Regional training events, planned and conducted by NCDDR staff, will focus on dissemination and utilization principles, and on specific strategies to address the special needs of user groups. These training events will be scheduled in collaboration with planned meetings, such as annual meetings of the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA), the National Association of Rehabilitation Research and Training Centers (NARRTC), the Howard Davis Society for Knowledge Utilization, and others suggested by NIDRR grantees.

Call 1-800-266-1832 to request technical assistance.

NCDDR staff may conduct a workshop at the annual NIDRR Project Director's Meeting to include orientation to resources available to grantees through the NCDDR, dissemination-related statistics, strategies for dissemination, dissemination-oriented research designs, and other topics of interest to NIDRR project directors. Call 1-800-266-1832 to request technical assistance. ⋆

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Strategies for Underserved Groups

Often in disability research, the ranks of underserved groups include people with disabilities who are also members of racial, ethnic, or cultural minority groups. It seems reasonable to expect research involving issues faced by people with disabilities to reflect an understanding of these cultural and racial differences. This, unfortunately, is not always the case with disability research, although some NIDRR-funded research is directly targeted at issues of cultural and racial difference and its influence on the lives of people with disabilities. Often dissemination strategies do not take into consideration the special factors that enhance the utility of disability research by minority group target audience members.

To investigate this area, the NCDDR will establish a Multicultural Research and Dissemination Task Force composed of disability researchers and users who are also members of minority groups. The Task Force will identify multicultural issues in research and dissemination (R & D), describe barriers to the use of research results by underrepresented groups and suggest strategies for improvements concerning minority group R & D issues, including the following:

- ★ assist in identifying research data, documentation, products, and other information resulting from NIDRR research activities that reflect multicultural-related issues
- ★ evaluate the scope of identified NIDRR research outcomes as related to all people with disabilities and their families, but especially those focusing on issues of race, ethnicity, underservice and underrepresentation
- ★ develop recommendations for dissemination strategies that will encourage the use of disability research results by underrepresented groups
- ★ assist in developing plans and measuring the progress of the NCDDR in terms of its objectives to facilitate the dissemination of useful disability research outcomes to minority persons with disabilities and their families ★

Source:
Independent living research. (1994). *Rehab BRIEF*, XVI, No. 4.

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How to Contact the National Center for the Dissemination of Disability Research

Call 1-800-266-1832 or 512/476-6861(Voice/Text Telephone) from 8-5 Central Standard Time, Monday through Friday.

Use a computer modem to contact us through the Internet at our e-mail address jwestbro@sedl.org or use our URL http://www.ncddr.org/

Write to NCDDR, Southwest Educational Development Laboratory, 211 East Seventh Street, Suite 400, Austin, Texas, 78701-3281.

Visit us in downtown Austin, Texas at the Southwest Tower, 7th and Brazos, one block east of Congress Avenue.

Fax your request to us at 512/476-2286.

Southwest Educational Development Laboratory **SEDL** | **NIDRR** National Institute on Disability and Rehabilitation Research

THE

Research Exchange

VOLUME 1, NUMBER 2 WINTER 1996

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A WORD FROM THE DIRECTOR

Alternate Formats and Accessibility

The 1990s have been marked with increasing emphasis on the right of a person with a disability to control and select the services and resources that he or she will use. Today, consumers are provided more opportunities from which to choose than has been the case in the past.

It seems clear, however, that the power of consumer choice rests on the degree to which the consumer is allowed to make an *informed* choice. Such a choice requires that the consumer has accessible information that is relevant to the choice to be made.

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Availability Versus Accessibility

The ultimate value of research lies in its use—leading either to changes in current practices and services or to the confirmation of them. Grantees conducting research and research-related activities through NIDRR funding bear a special responsibility to both demonstrate and model how all audiences—especially people with disabilities and their families—can access the information being generated. However, in spite of almost 30 years of efforts to strengthen the way in which the outcomes of research are shared with those that need them, problems remain. Leung (1992) reported on a series of NIDRR regional forums conducted in 1991 that indicated "information dissemination is an issue of concern for consumers, family members, and professionals" (p. 287). And, in addition, testimony from the forums "suggests the continuing need to move research and information from those who generate it to the user and the service provider in a form that has direct and immediate application" (p. 295).

While research results are frequently documented and available in some form, they are often not widely accessible to several critical audiences—such as people with disabilities, their families, advocates, or direct service providers (Edwards, 1991). There is a clear distinction between the availability of information—which may mean, for example, that a scholarly article may be found in a professional journal—and the accessibility of information—which implies "ease of access and simplicity of use."

Patterns of dissemination and associated products reported by NIDRR grantees often emphasize the availability of information rather than the accessibility of information. The NCDDR staff have analyzed and categorized data reported by grantees and discovered several predominant trends.

In FY 1993, 130 grantees reported products of their NIDRR projects for inclusion in the *Compendium of Products by NIDRR Grantees and Contractors* (NARIC, 1994) revealing:

- 19 percent of all products were journal articles, and
- 22 percent were books or papers (including chapters in books, concept/working papers, conference presentations, monographs, etc.).

Comparing these data with those reported in the FY 1994 Compendium by 110 grantees (NARIC, 1995), the following patterns emerge:

- 31 percent of all products were journal articles—an increase of approximately 50 percent from the previous year, making this the most frequently cited of all categories, and
- 21 percent of all products were books or papers—a one percent decline.

Clearly, the trend in most frequently reported formats for informational products is toward journals, books, and papers. This pattern tends to suggest more of an emphasis on the availability of information versus the accessibility of information. *A copy of the results of this comparison is available from the NCDDR upon request.* This issue of *The Research Exchange* discusses information that may help in maintaining the availability of information while increasing accessibility.

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Do You Have A *Dissemination Policy?*

A policy statement is a way many organizations express values to their staff and to the public. Policies serve as a foundation for implementation of procedures and often address areas that are regulated by legal requirements, as well as areas that have multiple potential staff responses. Policies help guide staff by establishing a common vision and a "standard" of accepted behaviors for staff to demonstrate to achieve that vision.

The question is: does dissemination deserve its own policy? Staff of the NCDDR feel that the development of such a policy could be useful in several ways:

- It helps to clarify the value placed upon dissemination by the NIDRR grantee organization.
- It provides an opportunity to consider the impact dissemination, and decisions reached about it, have on the ultimate utilization of information.
- It facilitates a clarification of the intended groups of users for the information generated through the disability research function.
- It can establish the value and assurances that will be engaged to achieve "ease of access and simplicity of comprehension and use"—in other words, accessibility.
- It can reduce staff confusion about the correct course of action and, as a result, lower staff costs and increase timeliness of response.

For unknown reasons, some organizations approach dissemination as an afterthought. Dissemination is often not dered as a part of the "real" scope-of-work and is frequently treated as nothing more than the distribution of a product to an all-too-frequent small group of professionals. Concepts of marketing and advertising are seldom linked to the dissemination plan for research outcomes. Policies are important opportunities for leaders to describe new ideals and new methods to achieve those ideals. You may be surprised to know that the U.S. Department of Education (ED) has recently developed its own policy regarding dissemination to people with disabilities. The new policy entitled "Policy Statement on Making Materials and Information Available and Accessible to Individuals with Disabilities" highlights areas that you should consider in developing your own policy statement. *If you do not have access to a copy of the ED policy mentioned and would like one, contact the NCDDR.*

The ED's policy addresses the following important areas:

- clarification of the regulations that support a need for the policy and a "standard" of action, for example, ED mentions Section 504 of the Rehabilitation Act of 1973 as amended, as establishing its obligations.
- identification of your intended information users and the way in which your choices of format and distribution are designed to positively affect utilization; the ED policy addresses intended users as anyone who may benefit from the activities of the ED such as employees, applicants, program participants, personnel of other Federal entities, and members of the public who have disabilities.
- description of how a policy on dissemination assists in reaching the organization's stated mission, for example, ED states that its policy on dissemination supports the mission "to ensure equal access to education and to promote educational excellence throughout the nation."
- clarification of how you intend to achieve accessibility or "ease of access and simplicity of comprehension and use," for example, the ED states that unless there are fundamental alterations or financial and administrative burdens created, all documents will b produced in the format most usable by the requester.
- identification of specific steps that will be taken to ensure that general public awareness of the availability of alternate formats of your material is planned; in ED's case, their policy addresses providing such information at display booths and on publication request forms in addition to the inclusion of special notices in all materials produced.
- specification regarding the timeliness of acquiring information via alternate formats, in other words, will all alternate format versions be available simultaneously or can an "acceptable delay and preparation" time frame be established?
- description of the strategies that are to be followed to implement the policy; the ED policy, for example, discusses administrative structures that will support implementation, funding for implementation, and rationale for the use of an outside contractor, among others.

The use of policy can be a very effective and low-cost method of addressing issues of dissemination and utilization. Although impacting the lives of end-users is often a goal of many human service projects and organizations, seldom do these projects and organizations explain how efforts of dissemination will be tied to utilization. In these days of discussions about "Universal Services" on the Information Superhighway (U.S. Advisory Council on the National Information Infrastructure, 1996), clear policy statements assist leaders and staff in "teaming" their resources to accomplish impact.

U.S. Advisory Council on the National Information Infrastructure. (1996.) *A nation of opportunity: Realizing the promise of the information superhighway.* Washington, D.C.: Author.

Alternate Formats and Accessibility
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While it is true that the information should address issues of interest to the consumer and his or her family, it is even more important that the information be made accessible to the consumer. In discussions of information accessibility, there often is a focus on *alternate formats*, usually for written materials that have been developed.

The production of alternate formats, however, should not be confused with the accessibility of information. Producing an alternate format—a large print version, for example—does not mean that you have made your information accessible to people with disabilities. Indeed, if none of your potential readers required this format, you would have wasted the time, energy, and money it took to produce the large print version. In this case, you would have produced an alternate format, but it would be a format that is developed without a specific target audience in mind and cannot be said to provide accessibility.

Accessibility of information can only be determined by the user. In other words, consumers must be able to choose the format or formats with which they can interact or communicate. Once this is determined, the production of a responding format becomes an *informed* format. The provision of your information to a consumer through an informed format enhances informed decision-making and accessibility. All too often, the issue of accessibility is discussed without knowledge of specific accommodations that individuals in your target audience may need to access information. Arbitrarily selecting one or two alternate formats for your information primarily benefits the information provider.

Usually, once the determination of alternate formats has been made, no further concern about accessibility is displayed by the typical information provider. Seldom, if ever, is a follow-up survey conducted to see if people with various types of disabilities were able to access the information and use it to make decisions.

Those who attempt to disseminate their information for the purpose of utilization must be sensitive to the difference between producing an alternate format and providing accessible information. Ensuring accessibility requires the production of *informed* formats.

—John D. Westbrook, Director

Choosing A *Primary Format*

One of the strategies that can be used to increase "ease of access and simplicity of use" is to consider the format(s) that will be used to communicate your information.

Unfortunately, the way in which information is formatted and "packaged" for sharing with others sometimes is done automatically. The "automatic pilot" format is regular print and the mode of distribution is through journals and professional papers. While this, no doubt, is an effective way to document and share relevant information with other professionals, it also seems apparent that this may not be the way in which one would expect to reach the range of audiences comprised of people with disabilities, their families, their advocates, and their service providers. Nothing here is intended to imply that journals, books, and papers do not effectively meet the needs of some audiences. However, these formats are not usually considered to be formats that guard the timeliness of information nor are these formats easily available to many others, due either to cost or professional dues structures. NCDDR staff are currently undertaking a significant research effort to determine how frequently cited beneficiary target groups of disability research outcomes report:

- their personal use of research findings,
- the formats and modes by which they receive the information they do use, and
- the way in which respondents would desire to receive information that provides "ease of access and simplicity of comprehension and use."

While the results of this research are not presently available, it seems probable that respondents will suggest an array of formats and modes that provide accessibility. Grantees need to consider a range of formats and modes for both the production and distribution of information. Effective communication patterns of the future are most likely to reflect a "mixed or merged media" approach to the sharing of information. In other words, "getting the message across" may involve video representation, verbal descriptions, audio associated sounds, manipulative information databases, in addition to the printed word! One can easily see the beginnings of this type of communication pattern emerging on electronic formats such as the Internet's World Wide Web. The selection of a primary format for your information should add to the communicative power of your message. Reluctance or indecision regarding what to do in the area of primary and alternate formats usually involves lack of information concerning:

- **Staff time** that will be required to develop various formats;
- **Equipment**, software, or other materials needed to support in-house production;

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- **Costs** of developing formats or contracting for services;
- Complexity of **effort** required to make materials ready and usable; and
- **Resources** available to help provide information and guidance in the production phase.

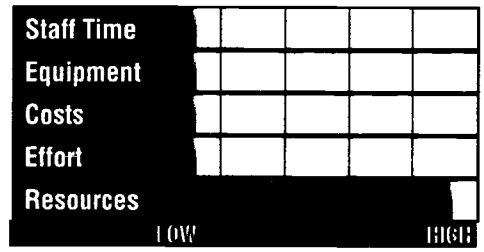
The following are some examples of formats that may be considered for communication by grantees. Information provided about each format addresses the decision/information points above.

A relational low-high scale graph is provided for visualization. In addition, "helpful hints" related to individual formats are provided.

- Large Print
- Audio Tape
- Braille
- Diskette
- Compact Disc
- Captioning
- Video and Descriptive Video
- Internet
- Summary

This is an example of a Large Print format using 18 point Helvetica with a 1.25 line space between lines.

Large Print



Staff Time

Generally, the production of larger-than-standard print is a function that can be accomplished in several ways:

1. Many word processing programs offer a choice of font sizes. A font size of 18 point or larger would be considered large print.
2. Materials that are in regular print can be magnified through the use of a copier machine found in many offices. This method may produce occasional problems with margins, requiring special effort in positioning on each page.

Helpful Hints for Large Print

1. Use an 18 point size typeface.
2. Use a 1.25 line space between lines (or larger if needed to avoid crowding).
3. Avoid the use of italics.
4. Avoid the use of hyphens at the right margin.
5. Begin all text at the left margin.
6. Avoid the use of columns.
7. Use standard size (8.5″ by 11″) paper.
8. Use a light yellow paper with black print.

Equipment

Large print versions can usually be produced with no additional equipment than that found in the average office.

Costs

Large print costs are minimal and with the exception of perhaps additional paper, seldom reflect perceptible additional costs.

Effort

Little complexity exists in the creation of large print versions in that they are one-to-one representations of the regular print versions.

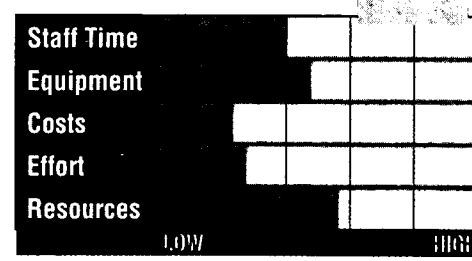
Resources

Technical support is often available via telephone and manual from software manufacturers to assist in adjusting font size and print type.

Helpful Hints In Creating Large Print Versions

1. Use an 18 point size typeface.
2. Use a 1.25 line space between lines (or larger if needed to avoid crowding).
3. Avoid the use of italics.
4. Avoid the use of hyphens at the right margin.
5. Begin all text at the left margin.
6. Avoid the use of columns.
7. Use standard size (8.5″ by 11″) paper.
8. Use a light yellow paper with black print for the most readable copy.

Audio Tape



Staff Time

The development of audio recordings creates a highly flexible format that many people with disabilities can easily use. This format is most conducive to narrative materials, however, some technical and visually-related materials can

frequently be "converted" into oral language for incorporation into the recording. A professional, specially paid speaker is not required to create your audio recordings. In fact, many times having someone that is very familiar with the material and has a clear speaking voice is all you need to create a high-quality audio format. Certainly, project staff often meet these requirements. Staff time on this activity will be expected to increase depending upon the level of in-house production assumed by the project.

Equipment

A tape recorder that allows recording on standard 30, 60, or 90 minute cassettes can be purchased at most office supply and discount stores. For those organizations that wish to create their own duplicates—once the initial "master" recording has been made—a high-speed audio tape duplicator can be purchased. The decision to purchase will require a determination of the frequency and number of audio tape versions that will be required over time.

Costs

Tape recorders are available in many retail and wholesale outlets today. The prices vary, however, a recorder of sufficient quality for a voice recording can be obtained for $25 to $75. High speed audio tape duplicators are more available today than has been the case in the past. A duplicator of sufficient quality to produce voice audio tape duplicates can be obtained for under $1,000.

Effort

Planning is required to arrange for the equipment, space, and narrator required to produce the audio tape recording. Additional effort is required if in-house duplication is performed. In many cases, however, the material to be read will not require additional interpretation unless it contains highly technical or graphically-presented content material.

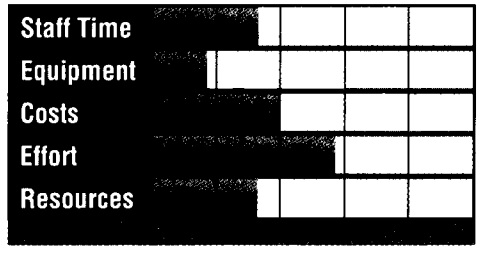
Resources

A range of resources are available to support organizations in this development activity. The National Library Service (NLS) for the Blind and Physically Handicapped produces a free directory, *Volunteers Who Produce Books*, which provides names of individuals and organizations that volunteer to assist in producing the narration for audio tapes for people who have visual or physical disabilities. The NLS can be reached by calling (800) 424-8567.

Helpful Hints in Producing Audio Tape Recording

1. Select a narrator that is fluent in the language and, if possible, knowledgeable in the content area.
2. Record in a conversational tone at a conversational pace.
3. Prepare in advance how tabular, graphic and pictorial information will be presented orally.
4. While recording, spell out difficult or unusual words—especially words of another language.
5. Narrators should read all of the material for presentation and not include "editorializing" or personal messages.

Braille



Staff Time

Braille is a tactile system of raised dots that can be read by some people with visual impairments and others. The production of Braille formats are usually accomplished by contracting for the service outside your organization. Staff time will be required to locate and contract with a Brailling service, as well as prepare materials for Brailling.

Equipment

If the Brailling service is contracted with an outside service, you need no additional equipment. If, however, you wish to produce your own Braille materials, you will need to consider the purchase or rental of a computer, Braille transition software, and a Braille printer. In addition, a scanner can be obtained that will convert a printed page into electronic digital form. This will not be needed if you already have the material in a word processed, electronic form.

Costs

The costs of contracting for Braille service vary by location in the nation, however, services usually charge for the original production of a page (usually less than $2 per page) and for each "reproduced" page (usually around $1 per page). If you have a generous time frame for development, you may be able to locate a source for your Brailling that is free or reduced cost. If you are acquiring a system to produce Braille for your organization, costs will range from $350 to $500 for the software, and around $1,500 for a low-end Braille printer.

Effort

The production of Braille formats requires staff time to locate, contract, and evaluate the job performed by an outside contractor. If appropriate equipment exists, the conversion process from the word processed version to the Braille version involves only the preparation of material for the Braille printer.

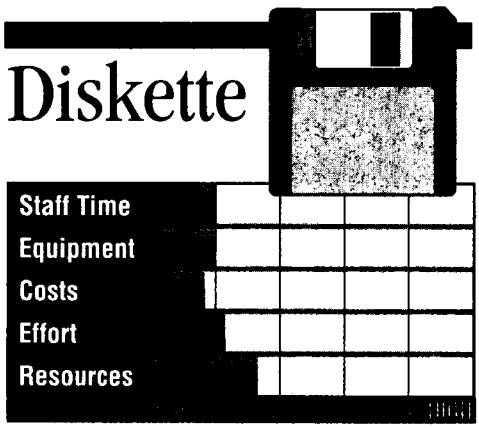
Resources

The free National Library Service directory previously cited includes a section describing Braille resources and services available by state and locality. Many of these resources will provide free or low-cost services. If limited local resources exist, your state vocational rehabilitation agency for people with blindness can be contacted for information about vendors and services that will assist you in producing materials in Braille. Some of these state agencies can assist you directly in this effort. In addition, many major colleges and universities provide access to equipment that can be used to scan and produce Braille copies.

Helpful Hints About Preparing Material for Brailling

1. Convert symbols, icons, and other abbreviations to text.
2. Omit the use of "number" (#) signs because they are automatically inserted in front of numbers in Braille.
3. Do not include extra blank lines in your text. Indicate new paragraphs with the use of one tab.

4. Determine what commands your Braille software reads from your word-processed version. Typical commands include: center, tab, indent, (hard) return, and page break.
5. Convert columns to continuous text. Tables, graphics, and pictorial representations need to be converted to text.
6. Eliminate the use of stylistic factors such as bold type, underlining, and special symbols. Italics are the only stylistic type form that typically translates into Brailled formats.
7. Use both upper and lower case letters in words; the use of all upper case, for example, doubles the pages or space needed for the Braille.
8. Convert any bullets (•) used in the text to an asterisk (*) or a hyphen (-).



Staff Time

Requests for information that is formatted and distributed via diskette are growing. This is due to the increase in computer systems that are augmented by synthetic speech readers that can read words in addition to displaying them visually. Many people with visual impairments or learning disabilities find this format eases their access to information. The amount of staff time required to produce diskette formats is relatively low, involving only the preparation of the information and the transference to a diskette.

Equipment

Most computers have word processing packages that allow information to be saved as an ASCII file. Many computers today are available with several drives that can be used to transfer ASCII files onto diskettes. Most computers that are not so equipped can be augmented with an additional drive that will allow this transfer to occur.

Costs

The costs of producing diskettes are low compared to many other formats. Diskettes are manufactured in 3.5 and 5.25 inch forms and are available in both high density and double density. Diskettes can be purchased for less than $1 each. If one is purchasing an additional low-end external disk drive for a computer, it will cost approximately $150 to $300. No cost is usually associated with the transfer of information in ASCII to a diskette.

Effort

Once a word-processed version has been produced, limited effort is usually required to prepare the material for transfer to the diskette form. The actual conversion process is automatically done by the computer system when the proper commands have been used.

Resources

Many software packages include a telephone number for technical support. In addition, most software comes with manuals that can be helpful in determining how to convert from the word-processed version to an ASCII version. If all else fails, you can usually contact local vendors that sell word processing software and obtain some technical assistance in using the software.

Helpful Hints About Preparing Materials for Diskette

1. Determine what size diskette your user needs. Typical diskettes come in either 3.5 or 5.25 inch sizes.
2. Convert symbols, icons, graphics, tables, pictorials, and abbreviations to text.
3. Do not include extra blank lines in your text. Indicate new paragraphs with the use of one tab.
4. Convert columns to continuous text.
5. Eliminate the use of stylistic factors such as bold type, underlining, and special symbols.

Staff Time

The use of data compact discs is rapidly increasing. The increase is due to several factors such as the significantly greater volume of data that can be encoded on a CD than on a diskette (approximately 700 floppy diskettes can be loaded onto a high density CD) and the growing prevalence of CD-ROM player drives on new computers and available as attachments for older ones. CDs can be used to capture audio, video, and text formats at the same time. Depending upon the organization of the CD, individual areas of the CD can be accessed, thereby not requiring users to linearly search through data as may be the case on a diskette. Staff time is required to learn how to operate the new equipment that "burns" or records CDs. Once this is mastered, the process of downloading is similar to that used in other formats.

Equipment

Equipment is needed to create CDs as opposed to simply reading them. Most computers that have CD drives only play data CDs so an augmentation of most computer systems will be required to add equipment that allows you to download directly onto a CD. Service organizations do exist in most areas that will assist you in creating a CD master and in creating copies of a CD. Special software is required to create CDs that can be read by several platforms such as Windows, Macintosh, and UNIX.

Costs

Low-end equipment to create data CDs can be purchased for around $1000. If you do not have a CD player, one may be purchased for $200 to $300. Blank CDs can be obtained for less than $10 and copies of CDs can be produced for

about $1 each, if done in volume. If repeated use of the CD technology is not planned, it may be more economical to contract for the service. Services that prepare master CDs usually charge $250 to up to $1,000 depending upon the nature of the information.

Effort

The effort associated with using this format is not high. It requires learning to use new technology. The use of CDs, however, can be expected to grow and it does represent a format that is unique in its ability to capture multi-media presentations of information in a format that is easily sorted.

Resources

Needed equipment can be obtained from your local computer supply vendor. Companies that offer mail-order services often have this equipment available.

Helpful Hints About Using Compact Discs

1. Determine what you want to include on your CD remembering that it is more flexible and can accommodate more formats than a diskette.
2. If a CD is going to be shared as an accessible alternate format it must be prepared in a manner that will allow a screen reader, for example, to operate. This means you should:
   - convert symbols, icons, graphics, tables, pictorials, and abbreviations to text;
   - convert columns to continuous text;
   - indicate new paragraphs with the use of one tab;
   - eliminate extra blank lines in your text; and
   - eliminate the use of stylistic factors such as bold type, underlining, and special symbols.
3. Graphics that may be included on your CD should contain descriptive text (and/or audio) portions to relay information conveyed through the graphic or pictorial matter.
4. CDs can be used to supply multiple formats separately or in merged forms. A simulation of Internet information systems can be created on CDs for information sharing and demonstration purposes. The many possibilities available through the CD format should be considered in your planning.

Staff Time

Acquiring the equipment to perform captioning of video is prohibitive for most organizations, therefore, this service is best performed by a video production or captioning company.

Equipment

Typically, captioning is a service that will be performed by a contractor; therefore, no special equipment will be required by the grantee.

Costs

Captioning can be done as a part of originally producing a video or it can be done after a video has been produced. It is preferable—for many reasons including cost—that the planning process include captioning, On average, it costs approximately $600 per 30 minutes of video to encode captions.

Effort

The production of captioned material requires staff to review video material and determine the desired text for captioning. Many captioning services will also perform this service. It is often useful, however, for you to determine what you think is needed in captioning and then discuss any differences with your captioning service.

Resources

A variety of resources exist to assist you in captioning material. You should consult with local video companies about the service and their rates. In addition, you may wish to contact one or more of these resources to determine rates and "turn around" times:

Caption America
312 Boulevard of the Allies, Suite 200
Pittsburgh, PA 15222
(412) 261-1458 (Voice and Text Telephone)

The Caption Center at WGBH Consumer Affairs Department
125 Western Avenue
Boston, MA 02134
(617) 492-9225 (Voice and Text Telephone)

Caption, Inc.
2619 Hyperion, Suite A
Los Angeles, CA 90027
(213) 665-4860 (Voice and Text Telephone)

Real-time Captions, Inc.
7101 Sepulveda Boulevard, Room 301
Van Nuys, CA 91405
(818) 376-0406 (Voice)

TRC Caption Center
4900 North Lamar Boulevard
Austin, TX 78751
(512) 483-4373 (Voice and Text Telephone)

National Captioning Institute
5203 Leesburg Pike
Falls Church, VA 22041
(703) 998-2406 (Voice and Text Telephone)

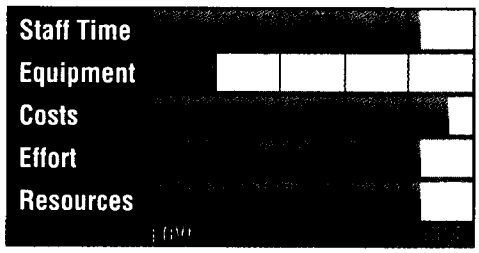
Rapidtext
Voice: (714) 644-6500
TDD: (714) 644-5131
FAX: (714) 644-5706

Helpful Hints About Working With the Captioning Contractor

1. Determine whether your contractor intends to use opened or closed captioning. Opened captioning is visible to everyone while closed captioning usually requires special viewing equipment to be seen. Although new televisions are being equipped with built-in closed captioning decoders, opened captioning is preferable because it can be viewed by the broadest range of equipment today.
2. Determine how sufficient contrast between the background video and the text will be assured. Ask to see examples.

3. Determine what size of lettering will be used. Make sure it is easy to read.
4. Determine what rate of pacing for the text will be provided. Generally, 60 words per minute for children and 150 words per minute for adults is used.
5. In producing captioning text for your contractor, remember to start a new line with each change of speaker; in some cases it may be important to identify the speaker. In this case, start the dialogue with the name of the speaker.
6. Your finished captioning should avoid the use of symbols. Be sure to check the spelling of all words.

Video and Descriptive Video



Staff Time

The production of high quality videos is usually a service that is contracted for by the grantee. Video production services require a significant amount of information to produce a desired video. Staff must determine the topic, speakers, visual content, remote location (if desired), informational content, graphics, captioning and descriptive formatting requirements. While production services can help with these, it is necessary for you to know what you wish to communicate through the video. Descriptive video provides an additional synchronized soundtrack about visual events happening in the video that may not be incorporated into the original auditory text. Descriptive video is often used to add descriptions of color, settings, costumes, physical characteristics and body language. The inclusion of this material often provides a richer experience for people with visual or other interpretational impairments.

Equipment

If contracting for video production, no special equipment is required. In some cases, a grantee may wish to capture some of the video from training, therapy, or other therapeutic procedures. In this case, a minimum of a standard size, low lux video recorder should be used. It is preferable to consult with your video production company prior to doing this to determine special requirements to make the video as high-quality as possible.

Costs

The production of videos can be quite expensive depending on the length, number of remote locations used, special graphics and captioning requirements. Many times, you will need to clarify your budget for the production of a video in advance. By making this clear to the video service contractor, you should be able to avoid surprise expenses. Descriptive soundtrack additions to videos can cost in the range of $1,300 to $4,500 depending upon the length of the video.

Effort

The production of a high-quality video requires significant effort. Because of the multi-media format that video makes available, it means that effort must be focused on the content, message, context, ant the special needs of the intended user groups. Although video services can be contracted, many decisions regarding the finished product must be made by you.

Resources

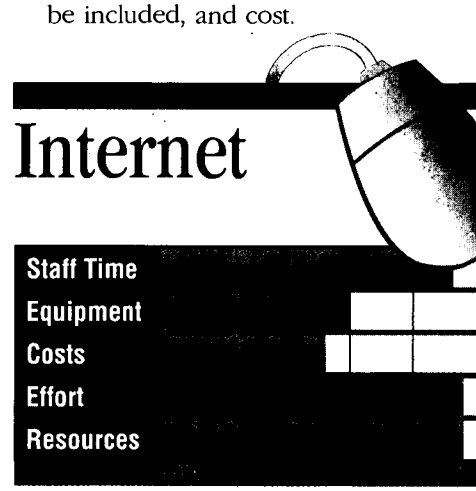
Many local resources generally are available for the production of video material. Consult with local television and video production companies for information about what services they provide.

Limited resources to assist in descriptive video production are available but WGBH's Descriptive Video Services is available to work with you. Contact WGBH in Boston at (617) 492-2777 and ask for Laurie Everett (extension 3735) or Gerry Field (extension 3496).

Helpful Hints About Selecting a Video Service Contractor

1. Great variation exists in the capabilities of video production companies. Shop around for the best rates and capabilities.
2. Ask companies that you are considering to give some examples of their video productions.
3. Determine how the video company will provide services themselves versus how they will contract with others for the services.
4. Share with the contractor your budget for the production and determine what service features you can obtain for your budget. Make clear those elements that are not optional, e.g., captions, versus those that are optional.
5. Obtain a written agreement for services from your contractor with timelines, video features that will be included, and cost.

Internet



Staff Time

The Internet is a computer-based system that allows mixed media information to be shared electronically, both nationally and internationally. New possibilities for networking, marketing, and information sharing are inherent in the Internet system. This format also includes the capability for electronic mail (e-mail). Technical support may be needed to help determine the way you will be linked to the Internet, and the address your server or your site will have.

Because of the novelty of the Internet, many staff may not have

skills in preparing information in HTML (HyperText Markup Language) and uploading it onto a site on the World Wide Web. A significant amount of staff time may be required for training as well as the initial effort to set up a site. Once the basics are mastered and a site is running, time can be used more efficiently. While the medium can save staff time in certain ways, for example, to send a message to a large audience simultaneously by electronic mail, it is a person-intensive medium that does requires a significant commitment of staff time.

Equipment

A computer with a modem (or on a network) is required for this format. In addition, there must be a server to link to the Internet. Setting up a site on the World Wide Web may not require additional equipment if you are a part of a system that is already linked to the Internet. Linkage can be direct—such as through the computer system of a university—or indirect—through an Internet service provider (ISP). Services such as America Online and Compuserve are moving toward providing Web access. Specifications for acceptable computer systems vary. The factors which typically impact your use of the Internet are the memory capability and processing speed of your computer and the speed of transfer possible through your modem. The type of browser and other software used and the way you are linked to the Internet will affect your ability to view graphic images and to download information.

Costs

The cost of a computer system that allows you to use the Internet as an accessible format for your information is approximately $3,000. In addition, depending upon the type of linkage, you may have on-line service charges of $10 to $25 per month. Most browsers such as Netscape, Mosaic and other necessary software are available free over the Internet system. Low-cost training on writing HTML documents is available from many sources such as colleges and universities. Ultimate cost savings can also be seen if information is posted on the Web where anyone who is interested can view and download it, rather than p[illegible]d distributing text copies. If you plan to purchase and set up a server, additional costs would be incurred, but this is not necessary in the majority of cases. Registering a domain address costs $100 for 2 years and must be approved by InterNIC Registration Services at 703-742-4777 or URL: http://rsØinternic.net/rs-internic.html

Effort

The development and maintenance of an Internet site is no small undertaking, if you intend to make it an effective communication medium. Operating such a system requires planning and may require staff to learn a new coding system, HTML. In addition, Internet versions of certain documents are not a one-to-one representation. In other words, many written documents will require reorganization, and perhaps revision, to be effectively displayed through an Internet information system.

Resources

An impressive array of informational resources are available through the Internet system itself and through your local bookstore or library. Many magazines are now available that are dedicated to the Internet and its use. Consultant help is available through local computer vendors as well as through the Internet. The NCDDR has developed a list of information resources that will be available through our Web site **http://www.ncddr.org/**

Following are examples of some of these resources:

A Beginner's Guide to HTML:
http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html

Classroom Internet Server Cookbook:
http://web66.coled.umn.edu/Cookbook/contents.html

Designing an Accessible World (Trace Center): http://trace.wisc.edu

How to Make a Great Home Page Without Knowing One Word of HTML:
http://www.valleynet.net/~kiradive/home.html

HTML Overview:
http://www.ora.com/gnn/bus/ora/features/html/index.html

Resources and Guides for Publishing on the Web:
http://www.sedl.org/ta/publish.html

Spectrum University (offers on-line classes): http://www.horizons.org/

The CPB/WGBH National Center for Accessible Media:
http://www.boston.com:80/wgbh/pages/ncam/ncamhome.html

WWW Tools & Places:
http://mambo.ucsc.edu/psl/wwwtp.html

World Wide Web Primer:
http://www.vuw.ac.nz/~gnat/ideas/www-primer.html

World Wide Web (WWW) Server Standards and Guidelines:
http://inet.ed.gov/~kstubbs/wwwstds.html

Writing Accessible HTML Documents:
http://www.gsa.gov/coca/WWWcode.htm

Contact the NCDDR to request a copy in another format.

Helpful Hints in Producing Internet Pages

1. Be sure that your Internet site demonstrates special features to make it most accessible to people with disabilities. Specific informational resources are available through the NCDDR upon request.
2. Know your goal and your intended audience. Your Internet site should have something to say to those you expect to visit the site.
3. The Internet is an interactive medium. Provide ways for users to give feedback on your site, and plan to update the site regularly.
4. Style is important, but content is more important. Do not include graphics in your Internet site that do not contribute to the understanding of the content you are communicating or help in understanding the organization of the information.
5. Facilitate moving through your site. Allow users to search through the information you have rather than expecting them to go through everything to find what they need.
6. Review your pages to see how the information appears using several different browsers. Check any "hot links" you include to make sure they remain operative. Software is available that will do this automatically.
7. Visit other sites on the Internet. This will give you experience in good and bad components of web pages so that your own site will be improved.

concluded on page 10

Choosing a Primary Format
continued from page 9

Format Summary

A need exists to carefully consider how you are making your project-related information accessible to all of your potential intended user groups. Decisions about the manner in which your information is formatted will either increase or decrease the "ease of access and simplicity of use" experienced by your intended users. The judicious choice of effective, flexible and accessible formats will facilitate utilization.

Comparisons can be made in analyzing and describing various types of formats that can serve as primary and alternate formats for your information. Some formats will be more helpful in communicating your message than others. Choices should be based on the information to be disseminated as well as the audience that will receive and use it. Our hope is that the information presented will assist you in avoiding the "automatic pilot" choice and in considering alternatives that may be more effective in different situations.

Availability Versus Accessibility
continued from page 1

Resources:

Edwards, L. (1991.) *Using knowledge and technology to improve the quality of life of people who have disabilities: A prosumer approach.* Philadelphia: Pennsylvania College of Optometry.

Leung, P. (1992.) *Translation of knowledge into practice.* In Walcott & Associates, NIDRR National CRP Panel Final Report. Washington, D.C.: Walcott & Associates.

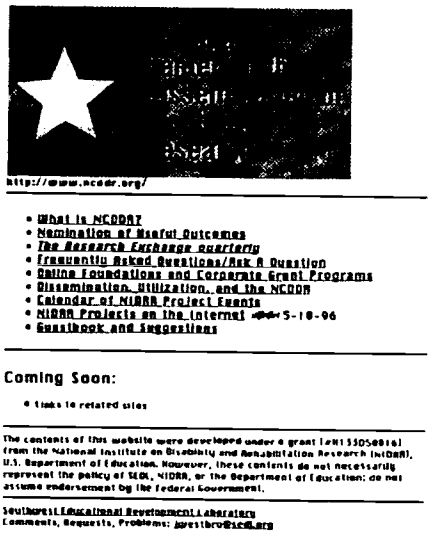
NARIC. (1994.) *Compendium of products by NIDRR grantees and contractors (FY 1993).* Silver Spring, MD: National Rehabilitation Information Center.

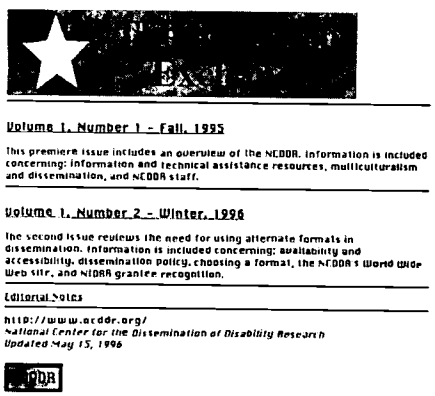
NARIC. (1995.) *Compendium of products by NIDRR grantees and contractors (FY 1994).* Silver Spring, MD: National Rehabilitation Information Center.

NCDDR World Wide Web Site

The NCDDR recognizes the World Wide Web (WWW) as a powerful medium that should be used routinely for information sharing and communication by NIDRR grantees, as well as NIDRR staff. The NCDDR has established a site on the WWW that can easily be accessed with Web browser software such as Netscape, Mosaic, and Lynx. The Uniform Resource Locator (URL) address for the NCDDR site is:

http://www.ncddr.org/





The NCDDR site serves as the hub of an integrated information system which will:

- make readily available pertinent information to help grantees increase their knowledge and implementation of dissemination and utilization strategies, particularly for consumers from minority backgrounds;
- serve as a mechanism for organizing and sharing materials developed by NIDRR-funded researchers;
- facilitate access to technical assistance materials developed by the NCDDR;
- promote interactive communication among NIDRR grantees with access to the WWW;
- utilize formats and modes of communication preferred by the recipients, such as electronic mail, fax, and U.S. Mail.

The NCDDR recognizes that some NIDRR grantees do not currently have access to the Internet. Alternate formats of materials and resources found on the NCDDR site will be made available to NIDRR grantees in their desired format and mode. NCDDR staff will also give assistance to grantees who want to increase their use of and presence on the Internet.

The NCDDR site is linked directly to the Web site of the Southwest Educational Development Laboratory (SEDL) where the NCDDR is housed. The SEDL site has information about SEDL and the U.S. Department of Education's Office of Educational Research and Improvement (OERI), as well as current SEDL publications.

Multi-Media Focus

Integrated multi-media formats (e.g. audio, video, graphics, and written text) will be used to demonstrate the broad range of communication tools that can be utilized in the Internet medium. At this time, most graphic items are also presented in text format for those who

do not have graphics capabilities. Audio and video clips will be made available on the NCDDR Web site, and audio versions of selected materials may be offered. Adaptive/assistive devices may be presented via 3-D imaging. The NCDDR will encourage interactive communication through electronic mail and other means. A *listserv* (automatic electronic mailing list) will be established to provide timely information and allow for interaction among groups of NIDRR grantees, NIDRR staff, and NCDDR staff. In addition, NCDDR staff are investigating the feasibility of conducting chat sessions in which NIDRR grantees can interact with each other and with NCDDR staff in real time to explore issues related to the utilization of outcomes in specific areas of NIDRR-funded research.

Current Items on the NCDDR Site

When a user accesses the NCDDR Web site, the home page gives a brief listing of the items currently available on the site as well as sections that are in development. Interested individuals may contact the NCDDR to request alternate format versions of any of the sections of the site described below. Following is a brief overview of the items now available at the NCDDR site:

What is NCDDR?
This section provides an abstract about the NCDDR, including its purpose, goals, and objectives. Instructions are given on how to obtain additional information and how to contact NCDDR staff.

Nomination of Useful Outcomes
The NCDDR is soliciting nominations of results produced through NIDRR grants and contracts. Outcomes that are nominated will be reviewed, and those selected will be disseminated more widely. This section describes the nomination process and includes a form for making nominations.

The *Research Exchange* Quarterly
An Internet version of the NCDDR's quarterly newsletter is posted, in some cases before a print version may have been delivered. Volume 1, Number 1 and Number 2 (this issue) are currently available on the Web site. The electronic version offers links to audio and video samples for those users who have appropriate helper software, as well as hot links to other sites on the WWW.

Frequently Asked Questions/Ask A Question
A number of questions NIDRR grantees may have about dissemination are answered on this page, with an electronic mail option at the end for users to ask additional questions.

Online Foundations and Corporate Grant Programs
A list is provided, with links, of 24 foundations and corporate grant programs that have Internet sites giving information about grants in areas that may be of interest to many NIDRR grantees. An electronic mail option allows users to suggest other sites to add to the listing.

Dissemination, Utilization, and the NCDDR
This section contains articles focusing on dissemination and utilization (D & U). The first article gives a overview of the history, theoretical frameworks, practices, evaluation activities, and implications; references are provided. Other articles posted focus on D & U characteristics and approaches.

Calendar of NIDRR Project Events
The calendar of events highlights conferences, workshops and other events sponsored or co-sponsored by NIDRR-funded projects. Users can view the entries for any month and are invited to add new entries to the Calendar by choosing the 'Add an event' option. Grantees are encouraged to add new events or to fax, mail, or call in the information.

NIDRR Projects on the Internet
NCDDR has developed a listing of NIDRR funded projects with World Wide Web sites on the Internet. The list is divided into NIDRR funding areas and the URL addresses link directly to the sites. A total of 74 sites were listed as of May 1, 1996.

Guestbook and Suggestions
The Guestbook allows users to give feedback and suggestions about items they would like to see on the NCDDR site, and ways in which the site could be improved.

Items under Development

A number of items are in preparation and will soon be uploaded to the NCDDR site. These include:

- Links to other agencies and important disability and rehabilitation research sites;
- A listing and description of disability-related listservs with instructions and links to subscribe; and
- A searchable, descriptive database of NIDRR grantees with electronic mail links.
- An on-line survey will be designed to obtain feedback on the usefulness and presentation of information on the Web site.

Technical assistance resources will be made available through the NCDDR's Web site. Examples of some of these technical assistance materials, in addition to the newsletter and calendar of events, include:

- Dissemination guides, such as how to improve dissemination and utilization, and how to identify and involve target audiences;
- Review of the key literature on topics such as dissemination and utilization and the impact of culture and minority status on D & U activities;
- Findings from NCDDR's research efforts including surveys of NIDRR-funded and other researchers, and potential users; and
- An online form to request technical assistance.

Visit http://www.ncddr.org/

You are encouraged to visit the NCDDR site, and to provide feedback and suggestions via the Guestbook, through electronic mail or any other medium you may prefer. People who are new to the Internet and unsure of how to locate the NCDDR site may call toll-free at **1-800-266-1832** for assistance from NCDDR staff. NIDRR grantees are especially encouraged to share and review information about your project's activities via the NCDDR site. It is your resource to shape and use in ways that are most beneficial to you. The NCDDR vision includes constant expansion and use of the World Wide Web site to communicate in innovative ways with those who can utilize the findings from disability research.

NIDRR Grantees Receive Recognition

During recent telephone interviews with the NIDRR grantees, the NCDDR asked if the project had been given an award, citation, or other special recognition during the past twelve months. The NCDDR selected representatives from the Rehabilitation Research and Training Centers (RRTCs) for special recognition in this issue of *The Research Exchange*. We congratulate each of the grantees, and encourage all NIDRR grantees to contact the NCDDR with information to share in future issues.

~

Dr. Tom Seekins is the Principal Investigator of the Rehabilitation Research and Training Center on Rural Rehabilitation Services at the University of Montana in Missoula. The project was invited to participate in the National Rural Conference (NRC) in April, 1995. The Conference was moderated by President Clinton and Vice President Gore, and culminated six rural forums held by the White House and the Department of Agriculture to precede congressional hearings on the reauthorization of the Agriculture Act. The RRTC was recognized as a national expert representing regional perspectives on rural America. Call **406-243-5467** to request the article "President Clinton Moderates National Rural Conference" by Tom Seekins, *The Rural Exchange*, Special Issue-July, 1995, or for further information **e-mail: ruraldoc@selway.umt.edu**

~

Dr. Charles R. Smith is the Principal Investigator of the Medical Rehabilitation Research and Training Center for Multiple Sclerosis of New York Medical College at the St. Agnes Hospital in White Plains, New York. The project received the Best Presentation Award sponsored by Berlex Pharmaceuticals, in September, 1995. [a]ward was given for a presentation on patient education at the Consortium of Multiple Sclerosis Centers. For further information call Dr. Rosalind C. Kalb at **914-328-6416, ext. 233.**

~

Dr. Edna Mora Syzmanski is the Principal Investigator of the Rehabilitation Research and Training Center on Career Development and Advancement of People at the University of Wisconsin in Madison. Dr. Syzmanski received the American Psychological Association Research Award for high quality research in areas of concern and interest to the counseling profession. Dr. Syzmanski was one of five national recipients of the award presented by the American Counseling Association. For further information call **608-265-5048** or **e-mail: ednas@macc.wisc.edu**

How To Contact The National Center For The Dissemination Of Disability Research

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1-800-266-1832 or 512-476-6861
Voice/Text Telephone from
8 A.M.-NOON and 1-5 P.M. Central Time,
Monday–Friday (except holidays)

Use a computer modem
to contact us through the Internet
at our e-mail address:
jwestbro@sedl.org
or use our URL:
http://www.ncddr.org/

Write to NCDDR
NCDDR
Southwest Educational
Development Laboratory
211 East Seventh Street, Suite 400
Austin, Texas 78701-3281

Visit us in downtown Austin, Texas
at the Southwest Tower
7th and Brazos
one block east of Congress Avenue

Fax your request to us
at 512-476-2286

The Research Exchange, a newsletter to promote the effective dissemination and utilization of disability research outcomes, is published quarterly by the National Center for the Dissemination of Disability Research (NCDDR) which is operated by the Southwest Educational Development Laboratory (SEDL). Neither SEDL nor the NCDDR discriminate on the basis of age, sex, race, color, creed, religion, national origin, sexual orientation, marital or veteran status, or the presence of a disability. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities for all individuals in all employment matters. The contents of this newsletter were developed under a grant (#H133D50016) from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education (ED). However, these contents do not necessarily represent the policy of SEDL, NIDRR, or the ED; do not assume endorsement by the Federal Government. For questions, comments, or to request this newsletter in alternate formats, contact:

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An electronic version of *The Research Exchange* Volume 1, Number 2 is available on the Internet at URL http://www.ncddr.org/

***The Research Exchange* is available in alternate formats upon request.**

THE

Research Exchange

VOLUME 1, NUMBER 3 SPRING 1996

At a Glance

A WORD FROM THE DIRECTOR

Dissemination Indicators

Dissemination is frequently discussed in very broad and general terms. In addition, dissemination is a term that is often described and defined in different ways. These characteristics leave many listeners in dissemination-related discussions wondering how to apply what they hear.

Regardless of these problems, it is clear that dissemination is a process that has measurable "markers" or indicators associated with it. Sadly, however, the evaluation of dissemination efforts is usually treated as if it is an impossible task or so difficult and time consuming that it can't be done by mere mortals. While it is true that collecting some detailed information about specific ways in which individual users have benefited from the application of disseminated information can be a long-term and human-intensive effort, it is not the case that meaningful dissemination-related evaluation information cannot be reasonably collected. Projects interested in strengthening their impact must evaluate the effectiveness of their dissemination strategies. Without an effective evaluation and feedback process that involves the potential users of your information, you lack sufficient information to know if dissemination achieves its intended purpose—use of the information.

There is no denying that the way in which research is conducted affects utilization. If research results are only meaningful within the context of their development, the research and development community must improve the understanding of original research contexts and support the replication of research studies to enhance the ability to generalize results. By expanding the replication of

continued on page 2

Dissemination Patterns of NIDRR Grantees

NIDRR grantees were asked to report products of their grant-related work in fiscal years (FYs) 1993 and 1994. Information reported was gathered by the National Rehabilitation Information Center (NARIC) and documented in the *Compendium of Products by NIDRR Grantees & Contractors* (NARIC, 1994, 1995). Analyses of these reported data suggest patterns of dissemination that are important "markers" in noting changes in dissemination strategies and in describing the most common formats and modes used for dissemination by NIDRR projects.

It should be noted that the data used in these analyses were gathered from NIDRR grantees beginning in FY 1993. This initial effort may have caused some confusion among grantees regarding what to report and when to report. This could have caused irregularities in the patterns established by these data. It seems reasonable, however, that the data from these analyses can be viewed as a beginning point in describing NIDRR grantee dissemination patterns. These data will be updated as new information is gathered and reported.

Reporting Data

Of the 294 NIDRR projects funded in FY 1993, 130 (44%) reported one or more products. In FY 1994, 114 (38%) of the 300 NIDRR-funded projects reported a product. Only 13% of the FY 1993 respondents also reported a product in the FY 1994 period.

continued on page 2

A WORD FROM THE DIRECTOR

Dissemination Indicators, *continued from page 1*

research studies, strength of the research results increase, if corroborated. Additionally, if research is conducted in a collaborative manner with the intended user groups, utilization occurs even more readily because it addresses needs of real people. The more reliable the research result and the stronger the potential user group involvement, generally, the easier utilization becomes.

Dissemination Patterns, *continued from page 1*

Differences in reporting by NIDRR program areas were also analyzed. *Figure 1* shows the percentage of total grantees per program area reporting one or more products during FY 1993 or FY 1994.

Figure 1

Percentage of Grantees Reporting By Program Area

Program Area	FY93 %	FY94 %
Research & Demonstration Projects	20	26
Rehabilitation Research & Training Centers	57	71
Innovative Research Projects	100	100
Utilization Projects	53	46
Rehabilitation Engineering Research Centers	60	75
Fellowships	50	11
Field-Initiated Research Projects	29	30
Model Spinal Cord Injury Projects	46	83
Research Training Grants	7	42
State Technology Assistance Projects	32	20
Technology-Related Projects of National Significance	10	75
ADA Technical Assistance Programs	33	17

Reported data indicate that for the two year period, only three program areas had a 50% or greater response-rate for both years. These program areas were Rehabilitation Research and Training Centers, Innovative Research Projects, and Rehabilitation Engineering Research Centers. Eight program areas showed an increase in the number of projects reporting in FY 1994, while four showed a decrease. One program area, Innovative Research Projects, reported 100% for both years.

In considering whether this pattern of response-rates affected the overall number of products reported, the NCDDR analyzed the number of products reported by each program area for FYs 1993 and 1994. This information is presented in *Figure 2.*

Figure 2

Number of Products by Program Area

Program Area	FY93	FY94
Research & Demonstration Projects	23	32
Rehabilitation Research & Training Centers	327	411
Innovative Research Projects	13	5
Utilization Projects	50	33
Rehabilitation Engineering Research Centers	54	170
Fellowships	4	1
Field-Initiated Research Projects	43	91
Model Spinal Cord Injury Projects	49	90
Research Training Grants	1	12
State Technology Assistance Projects	101	115
Technology-Related Projects of National Significance	2	13
ADA Technical Assistance Programs	46	37
Total Products Reported	**745**	**1,010**

Analyzing the patterns of past dissemination strategies, both individually and collectively, can assist in appraising the extent of change reflected in dissemination strategies over time, the degree of change promoted by the use of new technologies, and the nature of changes made to reach new audiences. This issue of *The Research Exchange* provides a snapshot of data concerning dissemination patterns demonstrated by National Institute on Disability and Rehabilitation Research (NIDRR) grantees in recent fiscal years and the capabilities and current dissemination trends among grantees. These measures may be helpful in serving as a "baseline" for comparing your dissemination experiences. Also in this issue, the award-winning efforts of several NIDRR-funded projects are recognized.

John D. Westbrook
Director

The number of products reported in FY 1994 was greater than the number reported in FY 1993. This is true despite the fact that fewer projects actually reported a product for FY 1994 than for FY 1993. Rehabilitation Research and Training Centers had by far the greatest total number of products reported with 411 in FY 1994 and 327 for FY 1993. Rehabilitation Engineering Research Centers reported the second highest number (170 for FY 1994, 54 for FY 1993) followed by State Technology Assistance Projects (115 for FY 1994, 101 for FY 1993).

Because the number of projects for each program area varies considerably, a more telling statistic may be the number of products per reporting project. The average number of products per reporting project is reported by year in *Figure 3*.

Figure 3

Average Number of Products per Reporting Project, by Program Area

Program Area	FY93	FY94
Research & Demonstration Projects	4.6	4.6
Rehabilitation Research & Training Centers	8.4	11.7
Innovative Research Projects	6.5	5.0
Utilization Projects	6.3	6.6
Rehabilitation Engineering Research Centers	6.0	14.2
Fellowships	2.0	1.0
Field-Initiated Research Projects	2.4	4.3
Model Spinal Cord Injury Projects	8.2	9.0
Research Training Grants	1.0	2.4
State Technology Assistance Projects	5.9	10.5
Technology-Related Projects of National Significance	1.0	4.3
chnical Assistance Programs	9.2	18.5

ADA Technical Assistance Programs submitted the most products per reporting project for FY 1993 and FY 1994. Rehabilitation Engineering Research Centers followed with 14.2 products in FY 1994 and Rehabilitation Research and Training Centers were next with 11.7 for FY 1994. In addition, nine program areas increased their number of products per reporting project from FY 1993 to FY 1994, while two areas showed a decrease, and one remained the same. There were sharp increases in the average product per project between FY 1993 and FY 1994 for the Rehabilitation Research and Training Centers, the Rehabilitation Engineering Research Centers, the State Technology Assistance projects, the Technology-Related Projects of National Significance, and the ADA Technical Assistance Programs.

Nature of Products

In addition to evaluating data on the reporting of products, the NCDDR analyzed the variety of products reported by grantees. A classification system of eight broad categories was developed to sort the products.

- **Journals**—journal articles and special issues of journals
- **General Awareness Materials**—abstracts, book reviews, brochures, fact sheets, newsletters, and others
- **Books, Chapters, Papers**—books, chapters in books, concept papers, paper presentations, conference proceedings, working papers, and others
- **Training Materials**—curricula, handbooks, guidelines, training modules, workbooks, design booklets, and others
- **Aids/Devices**—technological aids, assistive/adaptive devices, and others
- **Mediated Materials**—audio tape, CD-ROM, database, online Internet pages, software, videotape, electronic library, and others
- **Reports**—annual reports, final reports, and others
- **Miscellaneous or Unclassified Materials**—radio interview, test materials, survey, discussion groups, and others

The number of products reported by grantees for FY 1993 and FY 1994 are presented by category in *Figure 4*. In addition, the percentage of product type compared to the total number of products is reported for each fiscal year. Finally, the change in number of products between years and the magnitude of that change (displayed as a multiplier) are also shown.

Figure 4

Amounts and Percentages of Product Types for FY 1993 and FY 1994 and the Change Between Both Year

Product	1993	%	1994	%	Change	Magnitude of Change
Journals	149	20.0	311	30.8	+162	2.09
General Awareness	189	25.4	265	26.2	+ 76	1.40
Books, Chapters, Papers	156	20.9	219	21.7	+63	1.40
Training Materials	35	4.7	64	6.3	+29	1.83
Aids/Devices	0	0.0	4	0.4	+4	—
Mediated Materials	63	8.5	51	5.0	-12	0.81
Reports	54	7.2	37	3.7	-17	0.69
Miscellaneous	99	13.3	59	5.8	-40	0.60
Total	**745**		**1010**		**265**	**1.36**

In FY 1993 the three most reported categories (General Awareness Materials; Books, Chapters, Papers; and Journals) accounted for approximately 66% of all product types reported. In FY 1994, these same three categories comprised approximately 79% of all product types reported.

Overall, the number of products reported increased by a factor of 1.36 across the two-year period. Comparing the number of products reported by product type for FY 1993 to the number reported in FY 1994 reveals increases and decreases. The greatest increase between FY 1993 and FY 1994 was in the category of Journals, which more than doubled across the two years. Three other areas increased in magnitude: Training Materials, General Awareness Materials, and Books, Chapters, and Papers. Three types of products—Mediated Materials, Reports, and Miscellaneous—decreased in magnitude.

Observations

The data from FY 1993 and FY 1994 establish a beginning point in describing NIDRR grantees' patterns of dissemination. Data from subsequent years will provide a broader picture of how NIDRR grantees disseminate the outcomes of their research. From the FY 1993 and FY 1994 data several observations can be made.

- Less than half of all grantees reported a product. The majority of reporting grantees provided information for only one of the two years studied, with 13% reporting products in both years. This could be due to a wide variety of reasons ranging from the timing of the original request for information to the lack of reportable products.
- The majority of reported products were produced by projects in the Rehabilitation Research and Training Center and Rehabilitation Engineering Research Center program areas.
- Variations in the rate of reporting existed across program areas, with the rates of participation ranging from highs of 100% for Innovative Research Projects and 83% for Model Spinal Cord Injury Projects to lows of 17% for ADA Technical Assistance Programs and 11% for Fellowships.
- Overall, of the 12 program areas, 67% reported more products in FY 1994.
- Journal publications was the fastest growing product type and in FY 1994 was most frequently reported as a product of NIDRR grantees. Increases in this area mark the increase in scientific effort across all NIDRR projects.

Conclusion

This analysis of products reported by NIDRR-funded grantees suggests tentative patterns that will be monitored over time. Shifts in these patterns are expected to occur, reflecting the use of new approaches and technologies to support and enhance the process of dissemination.

Characteristics of Current NIDRR Grantees: Initial Findings

One of the primary objectives of the NCDDR is to gather information from a wide range of users and potential users of disability research. NCDDR staff contacted the Principal Investigators (PIs) of current NIDRR-funded projects to collect basic information about their general dissemination practices. Since no data on NIDRR project dissemination were found in the literature, the purpose of this first effort was to establish a baseline of data with which future data can be compared to determine if changes in dissemination practices occur over the NCDDR pilot project period. Future research will compare these responses with those of consumers to see if researchers' dissemination activities reflect the needs of consumers.

Instrument Development

The NCDDR's data collection efforts were initially intended to focus on the nature of NIDRR-funded disability research programs and their results, general awareness of NIDRR activities, target audiences that could benefit from research outcomes, and NIDRR grantees' perceptions about the use of research results or outcomes. Other issues to be examined included the specific impact of disability research in the lives of persons with disabilities; the effectiveness of current dissemination activities; future dissemination plans; barriers to the dissemination and accessibility of research results, particularly to audiences from multicultural backgrounds; and dissemination assistance needs. NCDDR staff and outside research experts designed and reviewed an instrument to collect this information. NCDDR staff then conducted a pilot test and determined that the instrument was lengthy and time consuming, and decided to refine the focus for the first phase of information collection. The revised information-gathering instrument was designed to be administered in a short telephone interview.

The instrument protocol included updating information reported in the *Fiscal Year 1994 NIDRR Program Directory* (NARIC, 1995). The name of the PI, the contact person (the PI or another designated person to be contacted about NCDDR activities), addresses, telephone and fax numbers, electronic mail addresses, and Internet access information were all updated. Each NCDDR contact person was asked to identify the preferred format and mode for receiving information from the NCDDR, including general day-to-day correspondence as well as newsletters and other materials and products.

NCDDR contacts were also asked about each project's capability to disseminate information to its target audiences through various formats and modes. The list of format and mode options was developed by NCDDR staff. The NCDDR contacts were asked if their projects had the capability to provide information in these formats, even if this had never been requested. This was not restricted to having the skills and resources onsite to produce alternate formats but included the ability to contract for needed services. When the answer was "yes," respondents were asked to indicate whether or not the format was frequently used. Formats were:

- Regular print
- Large print
- Braille
- Audio/oral
- Visual/graphic *(non-print)*
- Opened-caption video *(spoken dialogue is displayed on-screen as printed words, along with the visual image, and can be viewed without a decoder)*
- Closed-caption video *(spoken dialogue is displayed on-screen as printed words, along with the visual image, when a decoder is used)*
- Descriptive video *(provides narrated description of key visual elements, along with the original audio)*
- Electronic/computer file
- Other language

Contacts were asked to report which modes were used to disseminate information, and for those not used, which were projected to be used in the future. This did not require a definite plan or timeline, but included modes which had been discussed as possible targets for development in the future. Distribution modes included in the interview were:

- U.S. Mail
- Text Telephone *(TTY or TDD, used by people who are deaf or hard of hearing, and others)*
- Fax
- Audio tape
- Video tape
- Electronic mail
- Internet
- Computer disk
- CD-ROM

Information was also requested about events that grantees were sponsoring to include in the Calendar of NIDRR Grantee Events, special recognition received by NIDRR projects during the past 12 months, and the willingness of contact persons to work with NCDDR staff in future information-gathering activities.

The revised instrument was pilot-tested with four PIs from different NIDRR program areas who determined it to be easily administered in a telephone interview of approximately ten minutes. Several changes were made to further refine the telephone interview protocol.

Interview Procedure

Initial telephone interviews were conducted with the PIs and/or contact persons for 203 projects identified as ongoing in FY 1995 from the *Fiscal Year 1994 NIDRR Program Directory* (NARIC, 1995). Calls were made by trained telephone interviewers during January and February, 1996. Seven new projects funded by NIDRR in 1995 were identified through the interview process, for a total of 210 projects.

When the *Fiscal Year 1995 NIDRR Program Directory* (NARIC, 1996) was made available via NARIC's World Wide Web site, an additional 68 projects were identified as funded in 1995, as well as two more from 1994. Calls were made in April and May to the PIs and/or contact persons of those projects. This brought the total to 280 identified projects. One, an international project with the government of India, was not interviewed, leaving 279 projects that were interviewed. A total of 998 telephone calls, 40 fax transmissions, and 52 electronic mail posts were made to gather information from the current NIDRR grantees.

Results

The NCDDR verified existing information for each project and updated its database records for 279 current NIDRR-funded projects. Some comparisons among the different program areas are presented in the following sections.

Project Characteristics

A total of 280 current projects were identified. Of these, 75 were new awards in FY 1995, while 205 were funded during or before 1994. The 280 current NIDRR projects were funded under 16 program areas as shown in *Figure 5*.

Figure 5

Current NIDRR-Funded Projects by Program Area

Program Area	Current Total	Funded in or before '94	Funded '95
Research & Demonstration Projects	19	17	2
Rehabilitation Research & Training Centers	46	43	3
Innovative Research Projects	4	0	4
Utilization Projects	6	4	2
Rehabilitation Engineering Research Centers	16	13	3
Fellowships	15	0	15
Field-Initiated Research Projects	55	38	17
Interagency Agreements	1	1	0
International Projects *(not included in data collection)*	1	0	1
Model Spinal Cord Injury Projects	18	0	18
Research Training Grants	14	12	2
Small Business Innovative Research/I	1	0	1
Small Business Innovative Research/II	5	4	1
State Technology Assistance Projects	59	57	2
ADA Technical Assistance Programs	18	15	3
Contracts	2	1	1
Totals	**280**	**205**	**75**

Three of the sixteen program areas—State Technology Assistance Projects (59), Field-Initiated Research Projects (55), and Rehabilitation Research and Training Centers (46)—comprise 57% of the total number of current NIDRR-funded projects. Seven program areas make up only seven percent of the projects: Utilization Projects (6), Small Business Innovative Research/II (5), Innovative Research (4), Contracts (2), Interagency Agreements (1), International Projects (1) and Small Business Innovative Research/I (1).

The 279 NIDRR projects interviewed are directed by 253 PIs. A total of 231 (83%) of the projects are directed by a PI responsible for only one NIDRR-funded project. Nineteen PIs direct two projects, two PIs direct three projects, and one directs four projects. In addition, 11 PIs served as Co-Principal Investigators (Co-PIs) and two served as NCDDR contacts on other NIDRR-funded projects. One individual served as a PI on one project, a Co-PI on another, and as contact person on a third.

Nearly two thirds of the current projects reported no Co-PIs

(177, or 63%). Another 87 (31%) reported having one Co-PI, while 15 (5%) indicated having more than one Co-PI. Five Co-PIs served in that role for two projects, and one was Co-PI for three projects.

A total of 132 PIs (47%) identified themselves as the contact person for NCDDR activities. Another 17 PIs (6%) identified a Co-PI to serve as the contact person. Designated contact persons who were neither PI nor Co-PI were identified by 134 or 47% of the projects.

Internet Access

A total of 243 respondents (87%) indicated they have access to Internet services (which includes electronic mail). In addition, 88 projects (32%) have established sites on the World Wide Web (WWW), meaning that these projects have made information available to anyone who has access to the WWW. Another 65 projects (23%) are in the process of developing sites that should be ready by the end of 1996. This information, along with the projected total for the end of 1996, is presented by program area in *Figure 6*. The total number of projects for each program area is presented in parentheses.

Figure 6

Present, Future, and Projected Total Sites on the WWW

Program Area (No. of Projects)	Present Sites	Projected Future Sites	Projected Total Sites
Research & Demonstration Projects (19)	8	0	8
Rehabilitation Research & Training Centers (46)	19	13	32
Innovative Research Projects (4)	1	0	1
Utilization Projects (6)	3	3	6
Rehabilitation Engineering Research Centers (16)	10	2	12
Fellowships (15)	0	1	1
Field-Initiated Research Projects (55)	12	15	27
Interagency Agreements (1)	0	1	1
Model Spinal Cord Injury Projects (18)	3	7	10
Research Training Grants (14)	4	2	6
Small Business Innovative Research/I (1)	1	0	1
Small Business Innovative Research/II (5)	0	1	1
State Technology Assistance Projects (59)	17	18	35
ADA Technical Assistance Programs (18)	10	2	12
Contracts (2)	0	0	0
(279)	**88**	**65**	**153**

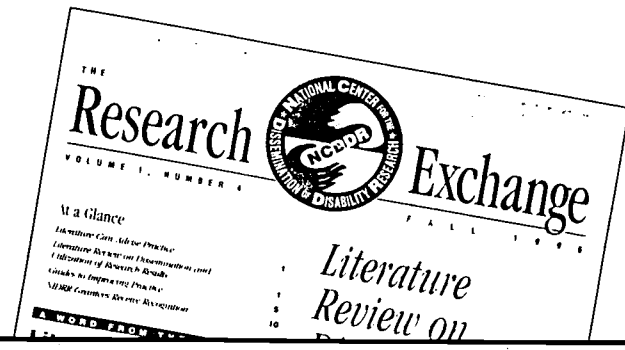
Coming up in the next issue of

THE

Research Exchange

Volume 1, Number 4

- Literature Can Advise Practice
- Literature Review on Dissemination and Utilization of Research Results
- Guides to Improving Practice
- NIDRR Grantees Receive Recognition



Rehabilitation Research and Training Centers had the highest number of present sites with 19. A total of 32 sites are anticipated by the end of 1996, representing 70% of all the projects in that program area. Seventeen State Technology Assistance Projects currently have WWW sites with a total of 35 anticipated by the end of 1996, accounting for 59% of all State Technology Assistance Projects. Field-Initiated Research Projects have 12 WWW sites; with a total of 27 expected by the end of the year, 49% of that program area will have WWW sites. Ten Rehabilitation Engineering Research Centers have sites with two more anticipated by the end of 1996, comprising 75% of the total for that area. Ten of the ADA Technical Assistance Programs presently have WWW sites and 12 of the 18 (67%) expect to have a site by the end of 1996.

Preferred Formats and Modes for Communication with NCDDR

A total of 274 (98%) of NCDDR contacts indicated that Regular Print was their preferred format for receiving day-to-day communication from the NCDDR. One hundred and ninety-four contacts (69%) preferred to receive such correspondence by U.S. Mail, 56 (20%) by Fax, and 81 (29%) by Electronic Mail (E-mail). A total of 47 respondents (18%) indicated that a combination of U.S. Mail, Fax, or E-mail would be appropriate, depending on the length and format of the communication.

Similar figures were reported for preferred formats and modes for materials and products such as this quarterly newsletter. Regular Print was preferred by 262 contacts (94%), Large Print by five, and Electronic/Computer File by 12. U.S. Mail was the preferred mode for 267 contacts (96%), while E-mail was preferred by 12 (4%).

Format and Mode Capabilities

Grantees were asked to report which formats they had the capability to produce, if requested, and which of those formats they believed they used frequently. Responses are presented in *Figure 7.*

Figure 7

Projects Reporting Capability to Produce Formats and Formats Frequently Used

Format	Capability #	Capability %	Frequently Used #	Frequently Used %
Regular Print	279	100	279	100
Electronic File	256	92	137	49
Large Print	249	89	77	28
Audio/Oral	246	88	68	24
Visual/Graphic(non-print)	229	82	77	28
Braille	206	74	46	16
Other Language	187	67	51	18
Opened-caption Video	149	53	32	11
Closed-caption Video	135	48	23	8
Descriptive Video	96	34	6	2

Seven of the ten formats reportedly can be produced by 67% or more of projects. The fewest grantees reported having the capability to produce the three video formats.

In contrast to projects' perceived capability to produce these formats, substantially fewer projects report using these formats frequently. Other than Regular Print, which is frequently used by 100% of respondents, and Electronic File, reportedly frequently used by 49%, all other formats are reported to be frequently used by 28% or less of projects.

Grantees were asked to report which modes they used to disseminate information, and for those not used, which were tentatively projected to be used in the future. This information is reported in *Figure 8.*

Figure 8

Current and Projected Future Use of Modes of Information Dissemination

Mode	Currently Used #	Currently Used %	Not Used #	Not Used %	Projected Future Use #	Projected Future Use %
U.S. Mail	279	100	—	—	—	—
Voice Telephone	279	100	—	—	—	—
Fax	276	99	3	1	—	—
Computer Disk	259	93	14	5	4	1
Electronic Mail	253	91	10	4	18	5
Audio Tape	236	86	38	13	4	1
Video Tape	207	74	62	22	9	3
Text Telephone	206	74	68	24	5	2
Internet	143	51	45	16	106	33
CD-ROM	83	30	158	56	46	14

All projects reported that U.S. Mail and Voice Telephone are modes that are currently used. Eight of the ten modes of information dissemination are reportedly being presently used by at least 74% of projects. The two modes reported to be least used, Internet and CD-ROM, are also the two most expected to be used in the future by projects that are not presently using them. Thirty-three percent of projects reported they anticipated using the Internet as a mode of information dissemination in the future, while 14% reported the same for CD-ROM.

Related Information

Respondents were asked if they would like to include any events in the new NCDDR *Calendar of NIDRR Grantee Events*. Over half (150 or 54%) responded yes. However, just more than half of those responding affirmatively (54%) have actually submitted events. Approximately 80 events were entered into the *Calendar,* which is located on the NCDDR's World Wide Web site. The URL address is **http://www.ncddr.org/**

Thirty-four NIDRR-funded projects reported an award or special recognition during the past 12 months. This reflects 12% of the total number of NIDRR-funded projects, or 17% of the projects funded prior to 1995. These included professional group recognition, *Telly Awards* for video productions, individual research awards, and exemplary service awards, among others. Several award-winning NIDRR-funded projects are recognized in this issue of *The Research Exchange.*

Respondents were asked if they would be willing to participate in future information-gathering activities of the NCDDR, such as telephone interviews, questionnaires, focus groups, teleconferences, etc. Of the 279 projects, 274 (98%) responded "Yes." The five "No" responses included two Field-Initiated Research projects, two State Technology Assistance projects, and one Model Spinal Cord Injury Project.

Observations

The following observations about the data reflect initial characteristics of NIDRR grantees as a whole.

- The Internet is viewed by NIDRR grantees as an important vehicle for disseminating information. As more and more people gain access to and learn how to negotiate the Information Superhighway, the Internet becomes a mode of information dissemination that has the potential to reach countless individuals who have interest in the research outcomes of NIDRR-funded grantees.
- The data suggest a gap between projects' capability to produce alternate formats and the frequency with which they produce those formats. This finding could reflect a limited number of accesses/requests by people needing such formats, a grantee's limitation—either through project design or budget—to provide such formats, and/or confusion concerning survey terminology such as "frequently."
- A number of projects report not being able to produce information using certain formats, even though contracting to produce these formats was considered the same as having the capability to produce them. This result may reflect that limited numbers of NIDRR proposals call for the frequent production of multiple alternate formats.
- Only half of the NIDRR-funded projects that indicated they would submit information for the *Calendar of NIDRR Grantee Events* have done so. NCDDR staff will continue to follow up on these contacts and investigate ways in which this reporting can be made more convenient. Grantees are encouraged to write, call, or fax the NCDDR with information they would like to submit for the *Calendar,* or to enter this information directly at the NCDDR's Web site.
- Grantees' overwhelming willingness to participate in further information-gathering activities of the NCDDR reflects a strong commitment to the dissemination and utilization of disability research information.

Conclusion

The purpose of this information-gathering activity was to establish a baseline with which to compare future data to determine if changes in the dissemination practices of NIDRR grantees occur over the NCDDR pilot project period. The NCDDR will continue to trace the use of different formats and modes of information dissemination and compare new data to the data reported here and to consumer data gathered at a later time. Additionally, the NCDDR will conduct further research on the frequency of use of alternate formats, ways in which mediated materials enhance accessibility to information, and implications for NIDRR grantees and the users of their research results of selecting various alternate formats for information dissemination.

One of the purposes of the NCDDR is to increase the capacity of researchers to identify and use development and dissemination strategies that meet the needs of their target audience(s). We welcome your ideas for future research efforts that will help you meet your dissemination and utilization responsibilities.

The NIDDR Grantees

The NCDDR would like to congratulate each of the following grantees and recognize their award or citation. All NIDRR grantees are encouraged to contact the NCDDR with information to share in future issues of *The Research Exchange*. For each item, we have identified the NIDRR-funded project name; the award, citation, or recognition; and the name of the Principal Investigator or contact for further information, with telephone number and e-mail addresses.

Two NIDRR-funded Projects have received *Telly Awards* for their work in video production. The *Telly Awards*, founded in 1980, were established to showcase and recognize outstanding non-network and cable TV commercials. The highly respected international competition was recently expanded to include non-broadcast video and film productions, and non-network programming. Over the years, the *Telly Awards* have gained respect in both the news and advertising industries, as well as in higher education as a mark of excellence and innovation. A distinguished panel of more than 20 highly qualified television production professionals judged the more than 9,000 entries in the 1996 16th Annual Telly Awards. The panel included a cross section of producers from agencies, TV stations, production houses, and corporate video departments.

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The **Utah Assistive Technology Program** (UATP) was awarded a 1996 *Telly Award* for the video "The Tech Act: Dramatic Gains for People with Disabilities." This video was developed in cooperation with the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA). The UATP received *Telly Awards* in 1993 and 1994 as well as honorable mention in the 1993 American Film and Video Festival. In addition to the *Telly Awards*, this project won first place in the 1993 National Council on Family Relations Media 's Competition for "The Sky is the Limit," a recreational video for people with disabilities. This video was a finalist in the 1992 International Health and Medical Film Festival.

The UATP earned the *Regional Recognition Award* from the Mountain Plains Information Exchange for outstanding service in the area of rehabilitation technology in 1993. Staff member Marilyn Hammond received the *1994 Media/Public Awareness Golden Key Award* from the Governor's Committee on Employment of People with Disabilities for effective professional and personal dedication to increase positive understanding and public awareness about people with disabilities. She has also served as a judge in the International Health and Medical Film Festivals since 1993. For further information on the project and its awards, contact Dr. Marvin G. Fifield, Principal Investigator, through the Utah State University, Center for Persons with Disabilities at **(801) 797-1981**, or via e-mail: **marv@cpd2.usu.edu**

A copy of "The Tech Act" video and list or copies of other videos can be obtained by calling Marilyn Hammond at **801-797-3811** (e-mail: **slhv3@cc.usu.edu**). Or call Martell Menlove at **801-797-3824** (e-mail: **mmenlove@cc.usu.edu**). Most videos cost $15-35 plus shipping and handling.

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The **Alaska Assistive Technology Project** received a 1995 *Telly Award* for the eight-minute video "Tools for Life" at the 16th Annual Telly Awards. Staff member Sharon White prepared the script and Tim Anderson of Lead Dog Production Company produced the video and entered it in the competition. The video is a demonstration of the assistive technology equipment in the project's assistive technology lending library. The video has been disseminated to independent living centers, other assistive technology projects, health care providers, as well as at conferences.

Ms. Kathe Matrone is the Principal Investigator. For further information or to order a copy of the video ($20 copy fee), contact Rose Foster on the Information Referral Line at **1-800-770-0138** or Mike Shiffer, Project Coordinator, via e-mail: **mshiffer@educ.state.ak.us**

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A **System of Technology to Achieve Results (STAR)** was cited and Ms. Rachel Wobschall, Principal Investigator, was quoted in the "Technology: Special Needs" section in the Monday, November 13, 1995 issue of the *Wall Street Journal*. The article on assistive technology was entitled "Free to learn: Computers designed for the disabled are reshaping the field of special education." Those interested may contact the NCDDR for information on how to obtain a copy of this article. For further information, Ms. Wobschall can be contacted through the Minnesota Governor's Advisory Council on Technology for People with Disabilities, Department of Administration at **(612) 297-1554**, or via e-mail: **mnstars@gteens.com**

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Receive Recognition

Ms. Joy Kniskern, Principal Investigator for **Tools for Life—Georgia Assistive Technology Program**, received the *Delano Award* from Roosevelt Warm Springs Institute for providing technology assistance to the institute. Ami Abshire, secretary for Tools for Life, served on one of the thirty teams of the Torch Bearers Nomination Committee which selected individuals to carry the torch at Olympic activities nationwide. Approximately 90,000 applications were reviewed by this committee sponsored by the Atlanta Committee on Olympic Games and the United Way. Ms. Kniskern can be contacted through the Georgia Department of Human Resources Division of Rehabilitation Services at **404-657-3082**, or via e-mail: **102476.1737@compuserve.com**

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RESNA has presented a *Certificate of Appreciation* for national leadership in policy development to benefit all persons with disabilities to Judy Brewer, Project Director of the **Massachusetts Assistive Technology Partnership Center**, for working on assistive technology and durable medical equipment coverage in national health care reform. She also received the *1996 Access Award* from the American Foundation for the Blind to honor individuals and organizations who have made a significant contribution to ensuring equality of access and opportunity for people who are blind or visually impaired. The award was for working as a member of a group of five individuals whose efforts have succeeded in making the Microsoft Corporation aware of the problems persons who are blind or visually impaired have accessing their products, and in producing a commitment from Microsoft to improve access. Marylyn Howe, Coordinator of Policy and Evaluation received a *Certificate of Appreciation* from the American Speech-Language-Hearing Association for acknowledgment of participation on their consumer task force, which was charged with developing consumer-friendly policies and practices among professionals serving people with speech and hearing loss. She also received the *I. King Jordan Distinguished Achievement Award,* from the Association of Late-Deafened Adults, which is presented to a person who is late-deafened and is a role model for other adults who are late-deafened and who has made exceptional contributions in a career or other long-term endeavor. She was recognized for her work with CART (Computer-Aided Realtime Translation) support, advocacy in the field of disability policy, and work on national health care reform as it relates to hearing loss. Ms. Nan Robbins is the Principal Investigator for this project. For further information please contact Jan Stankus, Coordinator of Public Awareness, at **617-355-7537 (V), 617-355-7301 (TT)** or via e-mail: **stankus@a1.tch.harvard.edu**

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The **Colorado Assistive Technology Project: Developing Colorado's Consumer Responsive System** received the *Excellence in Advocacy* award from the Colorado Protection and Advocacy (P & A) System in November, 1994. It was the first time such an award was made to a program in assistive technology by the P & A, which is housed at the Legal Center. Located at the Rocky Mountain Resource and Training Institute, Colorado's ATP was the first Tech Act project in the country to voluntarily develop a contract with the state P & A System. The success of the Colorado ATP/P & A contract served as a model for other states and provided leadership in developing the mandate for such contracts. For more information about the award or the working relationship between the Colorado ATP and P & A System, please contact Cathy Bodine, Project Director, at **303-534-1027** or e-mail: **rmrti@essex.uchsc.edu**

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The **Illinois Assistive Technology Project (IATP)** received the *Award for Participation* from the Illinois Department of Public Aid in December 1995, for contributing to writing a policy and offering training on augmentative communication. Ms. Wilhelmina Gunther, Principal Investigator, can be contacted through the Illinois Assistive Technology Project at **(217) 522-7985** or e-mail: **iatp@cencom.net**

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Dr. Cameron Riviere of the **Assistive Computer Interfaces for Persons with Movement Disorders Project** received "Best Student Research Paper" from the IEEE (Institute for Electrical and Electronics Engineering) International Conference on Engineering Medicine and Biology in Montreal, Canada, in October 1995. The paper, entitled "Modeling and canceling tremor in human-machine interfaces," was later published by Dr. Riviere and Dr. Nitish V. Thakor in *IEEE Engineering Medical Biology, Vol. 15,* 29-36. The article describes a method the authors have developed to measure and "cancel" tremor for persons with conditions such as Parkinson's disease and cerebral palsy. This work will help persons with tremor disabilities in using computer interfaces such as the mouse. Their present research focuses on how their methodology can help this population with handwriting. Drs. Riviere and Thakor are Co-Principal Investigators for the project, which is part of the Biomedical Engineering Department at Johns Hopkins Medical School in Baltimore, MD. For further information contact Dr. Thakor through the Johns Hopkins Medical School Biomedical Engineering Department at **410-955-7093**, or via e-mail: **nthakor@bme.jhu.edu**

The Research Exchange, a newsletter to promote the effective dissemination and utilization of disability research outcomes, is published quarterly by the National Center for the Dissemination of Disability Research (NCDDR) which is operated by the South-west Educational Development Laboratory (SEDL). Neither SEDL nor the NCDDR discriminate on the basis of age, sex, race, color, creed, religion, national origin, sexual orientation, marital or veteran status, or the presence of a disability. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities for all individuals in all employment matters. The contents of this newsletter were developed under a grant (#H133D50016) from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education (ED). However, these contents do not necessarily represent the policy of SEDL, NIDRR, or the ED; do not assume endorsement by the Federal Government.

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Voice/Text Telephone from
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Monday–Friday (except holidays)
or record a message 24 hr./day

Use a computer modem
to contact us through the Internet
at our e-mail address:
jwestbro@sedl.org
or use our URL:
http://www.ncddr.org/

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8 A.M.–NOON and 1–5 P.M. Central Time,
Monday–Friday (except holidays)

Fax your request to us
at 512-476-2286

THE

Research Exchange

VOLUME 1, NUMBER 4 SUMMER 1996

At a Glance

A WORD FROM THE DIRECTOR

Literature Can Advise Practice

The field of dissemination and knowledge utilization has a substantial literature base. The bulk of the literature is fairly recent ranging over the past 30 to 35 years. Interestingly, some of the literature developed in the 1970s (DAG, 1977) concerning new major conceptual dissemination components such as: spread, choice, exchange, and implementation, remains appropriate and useful today and serves as the "foundation" for further development (Klein and Gwaltney, 1991). Literature addressing such things as new constructs about how people process information in learning activities and the impact of new technologies on the access to relevant information, suggests the need for new considerations in planning effective dissemination and knowledge utilization processes.

The National Center for the Dissemination of Disability Research (NCDDR) feels that an awareness of the major literature on dissemination and utilization can be helpful to many

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Literature Review on Dissemination and Utilization of Research Results

This article highlights important aspects of the NCDDR's new publication, *A Review of the Literature on Dissemination and Knowledge Utilization*. The review is intended to provide a knowledge base for strengthening the ways in which disability research results can be accessed and used by those who need them.

Ultimately, for research to be relevant it must be linked to practice. If research results are not easily accessible and usable by those who need them most (i.e., persons with disabilities, their families, service providers, advocates, and other researchers, among others), they are of limited practical use. Overall, the literature on dissemination and utilization spans diverse fields including education, rehabilitation, sociology, psychology, and marketing.

The literature is filled with differing definitions and uses of *dissemination, knowledge utilization, diffusion,* and *technology transfer,* among other terms. These terms are sometimes used interchangeably, sometimes carefully distinguished from one another. The different uses and definitions reflect varying assumptions and interests, ranging from a limited focus on "getting the word out" to an all-encompassing focus on seeing new knowledge or products from creation all the way through implementation by intended users.

Historical Perspective

Backer (1991) describes the current focus on dissemination as a "third wave" of activities related to the understanding and promotion of knowledge utilization. The first wave, he notes, spanned the years from 1920 through 1960. The second wave took place during the period from 1960 through 1980, when a number of large-scale, federally sponsored dissemination and implementation studies were conducted. Most of the current literature consists primarily of new analysis and refinements of understandings from the work of the 1960s, 1970s, and early 1980s. As Paisley (1993) notes, "Many of the problems that challenge knowledge utilization have changed little since the 1960s and 1970s. However, the communications environment of knowledge utilization has changed dramatically" (p. 222). The proliferation of electronic communications--in particular, the widespread use of personal computers—has given rise to a number of new questions and issues about equity, access, and effectiveness.

Past examples of the dissemination of research results in the United States has primarily followed the agricultural extension model. The primary focus of this model is on distribution—getting the word out (Rogers, 1988). For example, in this model it would follow that if farmers know about better ways to irrigate crops, they will implement those

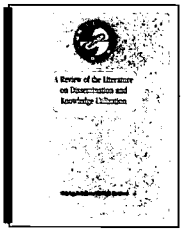
continued on page 2

Literature Can Advise Practice, *continued from page 1*

grantees interested in:

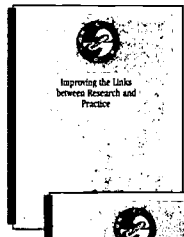
- developing a broader understanding of the field of dissemination and knowledge utilization,
- learning more about elements of dissemination and knowledge utilization that have been shown to be linked to effectiveness, and/or
- facilitating efforts in planning or evaluating dissemination and utilization activities.

The NCDDR is proud to have produced several new resources for your use.

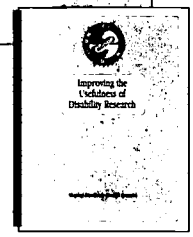


The first is *A Review of the Literature on Dissemination and Knowledge Utilization*. This review is designed to highlight major areas from the literature that are related to effectiveness in achieving utilization of disseminated information. Frequently, information related to dissemination and utilization is abstract and lengthy, making its application to your day-to-day work difficult. This new 38-page review developed by the NCDDR is designed to be as specific as possible and promote the generation of ideas that can be applied within your NIDRR grant efforts. NIDRR grantees may receive a free copy of this publication by requesting it from the NCDDR. References used in this issue of *The Research Exchange* are included in the larger reference list of the literature review and are also available upon request.

In an effort to be as user-friendly as possible, the NCDDR has also developed two other related resources:



Improving the Links between Research and Practice: Approaches to the Effective Dissemination of Disability Research



Improving the Usefulness of Disability Research: A Toolbox of Dissemination Strategies

These publications are the first two issues of a four-part NCDDR series called *Guides for Improving Practice*. These guides present selected information from the literature review and other sources in a practical application framework. Each of these guides is about eight to ten pages in length and they are available to any NIDRR grantee on a free-of-charge basis.

This issue of *The Research Exchange* highlights some of the information that is contained in these new publications. I encourage you to ask for your free copy of these publications as soon as you can. In addition, I welcome your feedback about the usefulness of the publications in your day-to-day work. The NCDDR will be developing additional resources for NIDRR grantees and your feedback would be very helpful in making each publication as practical and useful as possible.

John D. Westbrook
Director

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The Research Exchange is available in alternate formats upon request.

Literature Review

ways. This approach makes the assumption that knowledge is generally defined objectively, and that everyone will agree with what constitutes knowledge and will use it once they have it (Louis, 1992). This is a top-down approach to knowledge dissemination that developed as a result of uncoordinated and sometimes competitive activities.

Knowledge as a Learning Process

Another model of how people acquire and integrate knowledge is constructivism. It provides a new framework for viewing the dissemination and utilization efforts of disability researchers. The constructivist model is based on the understanding that knowledge is constructed by each individual and group, and this construction of knowledge is dependent upon the user's pre-existing knowledge, beliefs, and experiences (Hutchinson, 1995; Backman, 1982).

Beliefs about how learning takes place are often articulated as metaphors. The *tabula rasa,* the image of the mind as a blank slate, was once the most common metaphor. Shapiro (1994) notes that "despite the fact that the 'blank slate' view of the learner is not well regarded, it is still the view underlying the practice seen most often in school settings" (p. 8). Another common image is that of the learner as sponge, "soaking up" knowledge—a role that is somewhat more active than that of empty vessel, although what a learner absorbs is taken wholesale, without filtering or processing. A metaphor often used today in this era of technology is that of the brain as computer, which processes in an orderly, systematic fashion the information that is received from outside sources. In this analogy the learner actively does something to or with the information, which can be presumed to be altered in appearance, if not in substance, from the form in which it was originally received.

According to constructivist principles, none of these metaphors adequately describes the ways in which we as learners process information. Learners, from the youngest children to the oldest adults, are constantly seeking to make sense of the environment; to do so, we "construct" explanations that make sense based on our personal

on Dissemination and Utilization of Research Results, *continued from page 1*

experiences (Ackerman, 1995; Driver, 1995; von Glasersfeld, 1995).

Knowing, then, is an adaptive activity in which the learner seeks "not . . . . to arrive at truth about something already made but . . . . to make something right—to construct something that works cognitively, that fits together and handles new cases, that may implement further inquiry and invention" (Bauersfeld, 1995, p. 163). As Driver (1995) explains, "Human beings construct models of their environment, and new experiences [and information] are interpreted and understood in relation to existing mental models or schemes" (p. 386). The metaphors that suggest constructivist perspectives, then, are those of *building* and *shaping* new knowledge structures. Constructivism is not concerned with right or wrong; it is concerned with individuals making sense out of their environment.

In addition to describing the learning process, constructivist viewpoints have relevance for research. Huberman (1987) states that "individuals—alone or in organizations—transform and use research in highly selective and strategic ways" (p. 589). What is an "adequate" solution for one individual (or organization) may vary as well. The user's self-interest and self-image sometimes include considerations that conflict with what may appear, in terms of efficiency, cost benefits, or effectiveness of operation, to be the "best" solution. Merely telling people that their ideas or practices are wrong, or ineffective, or outdated, or that a better mousetrap is available to replace the one they are using, is generally an ineffective way to encourage change.

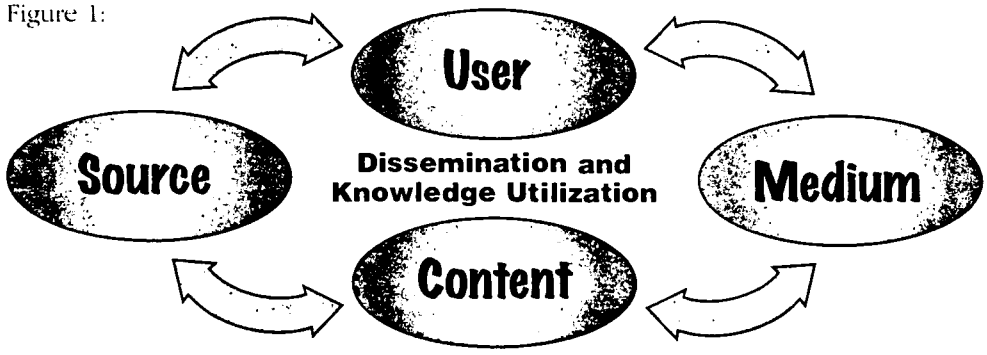
Before people consider change, they must be dissatisfied with current practice or outcomes. As Shapiro (1994) points out, "In order to take on a new viewpoint, one must decide to let go of an old one. There must be a reason to decide to make a shift in thinking" (p. 7). Sechrest, Backer, and Rogers (1994) in applying this understanding to the task of dissemination, note that if practitioners "are not in a state of uncertainty about a problem" (p. 187), the mere provision of information is not likely to lead to changes in behavior. Backer (1994) makes the point even more bluntly: "People and organizations develop the energy to change when faced with real pain . . . . whether the nature of change is personal (psychotherapy) or work-related (organizational change, implementation of an innovation)" (p. 7).

Finally, Fuhrman (1994), among others, sees constructivist perspectives as directly applicable to the enterprise of dissemination: "The research on utilization is quite clear: the meaning of research is conducted by the user . . . . Individuals translate research findings through the lens of prior knowledge and understanding, making sense of new knowledge in the context of their daily activities . . . . It is research on learning that is the foundation of understanding knowledge utilization" (p. 138). Fuhrman sees the promotion of utilization as much more than distribution and offering access. She calls for two major changes in current utilization practices in the field of education: "First, we should focus more on the context of knowledge users, and second, we should strengthen the integration between research and dissemination" (p. 138).

Four Dimensions of Knowledge Utilization

Four major dimensions of knowledge utilization are suggested by the literature. First is the dissemination *source*—the agency, organization, or individual responsible for creating the new knowledge or product, and/or for conducting dissemination activities. Second is the *content* or message that is disseminated—the new knowledge or product itself, as well as any supporting information or materials. Third is the dissemination *medium*—the ways in which the knowledge or product is described, "packaged," and transmitted. Fourth is the user or intended user of the information or product to be disseminated. *Figure 1: Dimensions of the Dissemination Utilization Process* illustrates the interaction of these elements.

Figure 1:



S O U R C E

Source. The literature reflects several important factors related to the dissemination source, including the source's relationship with potential users, the source's credibility, and specific strategies involving the source to help improve dissemination and utilization of research results. Indyk and Rier (1993) point out that dissemination of disability research involves more than researchers and decisionmakers. The increasing activism of persons with disabilities has prompted a new view of dissemination as a three-way model, with researchers, decisionmakers, and people with disabilities all functioning as both knowledge producers and knowledge consumers.

A major criticism of disability research is the often distant relationship of researchers and potential users of their research results. One way to bridge the gap between researcher and user is for researchers to be aware of the values and assumptions they bring to their research (Buchman, 1982). Like knowledge acquisition, the processes of conducting research and disseminating results to potential users are influenced by individuals' personal experience and prior knowledge. Researchers, in the process of disseminating their results, will operate within the guidelines of their values and assumptions, which may differ from the values and assumptions of their potential users. By explicitly stating how their values and assumptions potentially influence their results, researchers provide the opportunity to

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interpret and use results in ways that make the most sense to users.

Researchers who are not aware of their biases or who do not make their potential users aware of them, risk biasing their results. Research bias can affect the credibility of research outcomes for populations from diverse racial, ethnic, and/or cultural backgrounds (Duarte & Rice, 1992). Inconsistencies in racial classification and population sampling, overemphasis of between-group differences, and underemphasis of within-group differences can all affect the credibility of research results.

The perceived expertise and trustworthiness of researchers can also affect the credibility of research outcomes. Expertise refers to the perceived knowledge and/or competence of researchers, whereas trustworthiness refers to the perceived honesty and sincerity of researchers (Marquart, O'Keefe, & Gunther, 1995). Findings of some studies suggest that trustworthiness is more important than expertise in obtaining user support. The literature also indicates that users tend to accept assistance, information, and ideas from sources they know and trust (Carrillo, Lumbley, & Westbrook, 1990; Fullan, 1985) and that the source of disseminated information generally is more important to users than the content of the information (Hutchinson & Huberman, 1993).

An effective strategy disseminators can implement to dramatically improve dissemination and utilization of research results is to integrally involve targeted potential users in the planning, implementing, and evaluating of the research design.

An effective strategy disseminators can implement to dramatically improve dissemination and utilization of research results is to integrally involve targeted potential users in the planning, implementing, and evaluating of the research design. Fuhrman (1994) discusses the need for "building a client-based research agenda .... and developing forms for research that bring producers and users closer together" (p. 133). Organizational structures and reward ems can also play an important role in improving dissemination effectiveness. Dentler (1984) notes that when dissemination specialists in organizations work directly with policy planning, research and development, and evaluation, dissemination can have a greater impact.

C O N T E N T

Content. Research results can include "theories, models, paradigms, postulates, generalizations, or findings .... validated tests, curricula, techniques, programs, or systems," while technological advances can include "software products, devices, equipment, or machinery" (Edwards, 1991, p. 54). Content attributes that influence adoption of the use of results include: the quality of the content of results, the compatibility of users' needs and beliefs with the content of results, specific kinds of information that promote utilization of research results, and the comprehensibility of results.

The assumption that the quality of research results influences utilization is called into question by some researchers. Edwards (1991) reports that empirical studies have "found no relationship between research quality and use" (p. 61). Huberman (1990), reporting on a series of utilization studies conducted in Switzerland, concurs: "The poorly conceived and executed studies in the sample appear to do as well as others, or perhaps even slightly better, because research staff in the especially well-designed studies underinvest in dissemination work" (p. 606).

A barrier to the utilization of research results is the non-practical focus of research (West & Rhoton, 1992). Dentler (1984) stresses that "the property of knowledge that is essential for [use] is its congruence with the real world of practice" (p. 6).

Some kinds of information have proved to be especially important in promoting utilization of research results. For example, emphasizing positive behaviors and current rewards rather than negative consequences of current behavior promotes use. Kennedy (1989) stresses that utilization is a process that takes time. The research content should take the user from awareness to understanding to commitment.

Disseminated research results must be comprehensible, capable of being interpreted and used, if they are to be worthwhile (Majumder, Walls, Fullmer, & Dowler, 1994). A frequent complaint of potential users is that the language of disseminated research results is too technical (West & Rhoton, 1992). Some suggestions for "transforming" research outcomes into usable, comprehensible messages are to provide simple and clear messages, to keep the messages brief and at a low level of abstraction, and to repeat and reinforce messages (Backer, 1988; Glaser, Abelson, & Garrison, 1983; Soumerai & Avorn, 1987). In addition, analogies are particularly useful to convey messages about research results (Shapiro, 1986).

M E D I U M

Medium. The medium by which research results are distributed to users can enhance or detract from utilization (Klein & Gwaltney, 1991). Selection of the dissemination media most appropriate for a particular content and audience is a complex and challenging task. For persons with disabilities, physical access to information is an essential concern for disseminators when choosing appropriate media (Leung, 1992). Digital technology and related equity concerns, the primacy of personal interaction, the use of multiple media formats, and targeting media for persons with disabilities are topics addressed in the literature.

The widespread use of "small media" such as personal computers, and a proliferation in use of the Internet and other electronic networks, have brought new, cost-effective dissemination channels to an ever-broadening audience. However, little is known about the use of these media in disseminating research results (Paisley, 1993). In addition, there are equity concerns such as access to this media by persons with disabilities, as well as by individuals with lower incomes, with lower educational attainment, and/or of different races (Anderson, Bikson, Law, & Mitchell, 1995; NIDRR, 1994).

The literature indicates that direct personal interaction is the most important aspect of an effective medium for disseminating information (Paisley, 1993). To enhance utilization, direct personal contact should occur between

researchers and users before, during, and after studies. Much of this contact should be face-to-face (Huberman, 1990). The frequency and duration of this interpersonal contact is also important. Peterson and Emrick (1983) suggest that in most cases direct intervention should be carried out over a period of at least two years. Huberman (1990) concludes, from a survey of the utilization literature, that projects need to allocate twelve percent of project time and resources to dissemination activities.

Using multiple or merged media formats and targeting media to persons with disabilities are other strategies advocated in the literature. A combination of media and interpersonal strategies is an important consideration in meeting the needs of a diverse audience (Crandall, 1989; Edwards, 1991). A number of information channels exist for people with disabilities, including the Internet, electronic bulletin boards, special topic listservs and newsgroups (Fullmer & Majumder, 1991). Newman and Vash (1994) believe that those persons with disabilities who receive services are likely to receive new information about research through their service contacts. But for those who do not, they suggest the mass media will be the primary means for disseminating information. Some of these channels, such as television networks and mainstream magazines, are more expensive to target.

U S E R S

Users. The understanding that individuals and groups are active participants in the construction of knowledge is a vital aspect of disseminating research results to users. This understanding has two principal implications. One is that the materials to be disseminated must address the concerns of a potential user's daily life. This can be done by involving potential users in the research process from the beginning, with ongoing and substantial interactions between researchers and users. The second implication involves the user's readiness for change. Researchers cannot overestimate the importance of this element. Even the clearest results will not be utilized if the potential user is not ready to incorporate them into their personal existing schemata. This lack of readiness is not necessarily negative, however; it may serve to question the practical worth of some research.

Effective dissemination rests upon how much the disseminator knows about the intended recipient audience. Selected important, need-to-know characteristics of intended users include:

- dissemination media preferred,
- level of contextual information needed,
- capacity to use information or product,
- perceived relevance of information to user's needs,
- readiness for change,
- information sources trusted, and
- format and level of information needed.

An important task for disseminators is to understand the incentives that influence potential users to change. These incentives can be internal or external. Some research suggests that external mandates for change are important but that personal incentives are more potent (Hutchinson & Huberman, 1993).

Involving potential user audiences in setting research agendas and conducting research and development activities can help to address issues related to readiness for change. Seeking input from users at all stages of the research process, structuring activities around issues identified as important by users themselves, and helping users to reflect on their own preconceived ideas and concerns are important elements in actively engaging users in dissemination efforts (Brown-McGowan & Eichelberger, 1993).

The size of the user audience is also an important consideration (Dentler, 1984). Selecting a target audience that is too large can dissipate the impact of dissemination efforts. Conversely, a target audience that is too small limits how far results will be disseminated.

Very few empirical studies have been conducted to explore differences in dissemination issues related to specific racial or ethnic groups or among persons with disabilities. However, there are demographic data that need attention. An example is the association between disability and race, ethnicity, income, and educational attainment. Some ethnic and racial minorities are overrepresented in certain disability categories. The implications of this for disseminators are great. There is also evidence that members of minority populations with disabilities are not obtaining the rehabilitation services they need (Duarte & Rice, 1992). Strategies to help researchers avoid bias include ensuring that members of minority communities who are participants in studies are represented on research teams, and getting feedback about results from those group members, to help identify inaccuracies in interpretations (Davis, 1992).

Cultural differences affect the ways in which potential users interact with and perceive the work and communications of disability researchers and practitioners. These differences, according to Duarte and Rice (1992), may include "world view, family boundaries, quality of life, importance of religion, meaning of work, meaning of education, decision-making style, belief in change, and response to change" (p. 17). Duarte and Rice note that experts in "the field of intercultural communication emphasize cultural differences related to context (the information that surrounds events), space, time, speed (with which relationships are developed), information flow, and rules (and rituals)" (p. 17). Whether a particular culture places more emphasis on the individual or the collective group plays a major role in how groups interact (Gudykunst & Ting-Toomey, 1988).

It appears further research to explore how particular cultural groups access information may be needed. Researchers must be aware that between-group differences are often overemphasized while within-group differences are underemphasized in research (Duarte & Rice, 1992). To suggest, for example,

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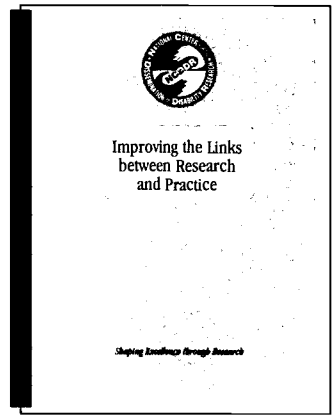
A combination of media and interpersonal strategies is an important consideration in meeting the needs of a diverse audience.

Guides to Improving Practice

The NCDDR has developed two guides to assist grantees interested in improving their dissemination practices. Each guide is brief and focused on specific aspects of the dissemination and utilization process. A brief description of material included in each of the two guides is provided below.

Improving the Links between Research and Practice: Approaches to the Effective Dissemination of Disability Research

The first guide in the NCDDR series bridges the gap between the disability research community and the world of practice. Frequently dissemination has fallen prey to the very dilemma it seeks to address. That is, research on



dissemination, or knowledge utilization, has produced a wealth of information about what does and does not work. But those understandings, for the most part, have not moved from the research community—those who study the process of knowledge use—to the practice community—those actually responsible for disseminating research outcomes for use.

A number of experts have pointed out that research results require special attention if they are to be applied—they are, in short, not used like a can opener. Many research outcomes have implications for how programs are run, services are provided, money is allocated, information is interpreted, or materials are used. Application of research results frequently requires personal and/or organizational change. To be successful, the change process must be carefully planned and implemented.

A major focus of current research is to confirm practice or to change it. The outcome of such research is usually expressed as exemplary programs, best practices, or other types of effective models. The literature supports the view that change—needed for the application of such models—is difficult to bring about. People cling tenaciously to their beliefs and ideas. A classic experiment in constructivism involves learners (including adult learners) who observe two objects falling from some height to the ground. The laws of physics tell us that,

Literature Review,

continued from page 5

that all African Americans prefer to access information from friends and the local media, ignores the population of African Americans who prefer to access it from journals and the Internet. In fact, some research suggests that members of racial and ethnic minority groups clearly have varied means of obtaining information and varied sources that they trust (Edwards, 1991).

Finally, O'Connor (1993) points out the importance of understanding individuals with disabilities in the light of all their characteristics. These include characteristics of culture, gender, ethnicity, sexual preference, income level, and individual preferences about how people choose to live their lives. Individuals' identities are limited by looking only at a disability.

Major Implications

Dissemination and knowledge utilization literature tend to suggest the following points:

- Dissemination is far more than the simple distribution of paper or products; it is a process requiring a carematch among (a) the creation of products or knowledge, and the context of that creation, (b) the needs, contexts, prior experiences, values, and beliefs of target audiences, and (c) the content, media, formats, and language used in getting the outcomes into the hands, minds, and activities of those target audiences.
- The goal of all dissemination should be utilization. Utilization may mean different things to different members of a target audience; in some cases, it may mean rejection of a product or research finding. The critical element of utilization is that the research outcome must be critically and thoroughly digested, and the individual (or organization) must fit the new information with her or his prior understandings and experience.
- One of the most effective ways to increase utilization—and to improve the quality and relevance of research—is to involve potential users in planning and implementation of the research design itself.
- Effective dissemination requires an understanding of knowledge use as a process of learning, and of change.
- Effective dissemination is critically linked to its timeliness and comprehensiveness.
- Effective dissemination of disability research requires careful planning and effort throughout the life of a research project.
- Dissemination requires ongoing personal support and intervention in order to achieve utilization.
- All NIDRR grantees share in the responsibility to disseminate their project results to all appropriate target audiences, and in accessible formats.

Conclusion

Many improvements have been made in the dissemination of disability research (Blasiotti, 1992). NIDRR and other branches of the federal government are working to establish common perspectives as well as coordinated approaches to dissemination, and to encourage the incorporation of appropriate dissemination into all stages of the research, development, and utilization process.

Note: A list of references is available upon request and is included in the NCDDR review of literature.

no matter what an object weighs, it will fall at the same speed, so that a rock and a paper clip, for example, when dropped at the same time will land at the same time. But most non-physicists believe, based on extrapolations from other experience with heavy and light objects, that the rock will fall *faster* than the paper clip—and experiments show that, in observing the two objects fall, people often "see" the rock hit the ground *before* the paper clip. Our expectations can shape not only what we believe but what we actually experience. For change to take place, users must first recognize and be bothered by discrepancies. When old ways don't work, people are more open to change.

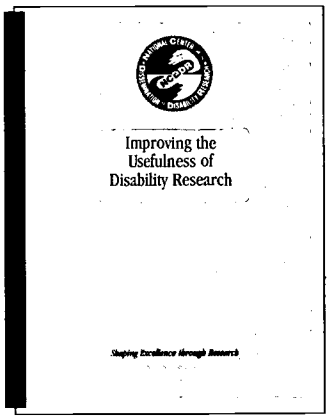
Some findings from the research on knowledge use suggest a few of the complexities of the dissemination process:

- The actual quality of research is less important, in terms of the likelihood of its getting adopted and used, than the extent to which it fits with users' established beliefs and experiences.
- The source of information about research outcomes is also more important than the quality of the research. People tend to trust sources with whom they have established relationships.
- When research does get used, the resulting practices, programs, or products are often quite different from the researcher's original conception.

Implications for researchers interested in analyzing/improving practice include the following principles:

- understand that dissemination is not synonymous with publication;
- know your audience and make sure your audience knows you;
- carefully plan in advance for dissemination;
- assess your knowledge about intended user groups and supplement your knowledge by soliciting information—perhaps through needs-sensing activities—about them;
- involve users in research and development activities, seeking input and feedback;
- build relationships with users and intermediaries; and
- be aware of the impact the size of a target audience has on your dissemination activities.

Improving the Usefulness of Disability Research: A Toolbox of Dissemination Strategies



The second guide in the series focuses on the effectiveness of dissemination strategies by analyzing the components of: source, content, medium, and intended user. Although research results are often available to those who diligently seek them, they are usually not widely accessible to several critical audiences: persons with disabilities, their families, advocates, and/or direct service providers. There is a difference between availability—which may mean, for example, that a scholarly article may be found in a professional journal, or that a final report will be sent upon request—and accessibility, which implies ease of access and simplicity of comprehension and use.

There are several reasons for this gap between research and use. One is a lack of communication between researchers and their intended audiences. In addition, dissemination is often not a high-status activity among researchers; it must compete with more apparently rewarding activities for limited project resources. A third reason for a gap is that those involved in dissemination tend to underestimate the complexities of the dissemination process and rely on less-than-effective general strategies.

To be effective, dissemination efforts must address a range of factors related to basic components of dissemination mentioned previously. These include such things as:

Source
- Perceived competence
- Credibility of Experience
- Credibility of Motive
- Relationship to Other Sources Trusted by User

Content
- Credibility of Research and Development Methodology
- Credibility of Outcomes
- Cost Effectiveness
- Relationship between Outcomes and Existing Knowledge or Products

Medium
- Timeliness of Accessibility to Needed Information
- Reliability
- Capacity to Reach Intended Users
- Clarity and Attractiveness of the Information "Package"

User
- Perceived Relevance to Own Needs
- User's Readiness to Change
- Level of Contextual Information Provided
- Dissemination Media Preferred/Used

More information about each of these components and other related aspects of information dissemination and knowledge utilization are available to you from the NCDDR. A free copy of these guides is available to each NIDRR grantee upon request.

NIDRR Grantees Receive Recognition

Mr. J. Howard Green, Training Associate with the **Rehabilitation Research and Training Center on Supported Employment** at Virginia Commonwealth University in Richmond, Virginia, has received the National Association Mid-Atlantic Region Rehabilitation *Manpower Award* at its annual conference held in Baltimore, Maryland. The Manpower Award is given to an individual for significant contributions in the professional preparation and upgrading of rehabilitation manpower. The award signifies dedication and leadership in the pursuit of quality services for individuals with disabilities. For further information, call **Mr. Green at 804-828-1851** or e-mail: **jhgreen@atlas.vcu.edu**

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Dr. Susanne Bruyere, Principal Investigator for **ADA Materials Development Project Relating to Employment**, has been awarded the 1996 Karl F. Heiser Award for advocacy by the American Psychological Association (APA), which will be presented at the 1996 Annual APA Conference in Toronto. This is a special award created to honor individuals who have been in the forefront of advocacy and who have helped to create and shape psychology. For further information, call **Dr. Bruyere at 607-255-7727** or e-mail: **smb23@cornell.edu**

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Mr. Anthony Langton, Project Director of the **Center for Rehabilitation Technology Services**, was named a RESNA (Rehabilitation Engineering and Assistive Technology Society of North America) fellow at its 1996 conference. In order to be honored as a RESNA fellow, an individual must be a RESNA member for at least ten years demonstrate substantial contribution to the field of assistive technology, and participate within RESNA as an officer, board of directors member, in special interest groups, and on committees.

Mr. Langton was honored for his long-term commitment to RESNA, his active service on program committees and within the special interest group on worksite accommodations, and for his extensive work in the field of assistive technology applications. For further information, call Neil Lown at **803-822-5362**, or e-mail: **nlown@scsn.net**

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Dr. Charlie Lakin, Principal Investigator for the **Rehabilitation Research and Training Center on Improving Community Integration for Persons with Mental Retardation**, has received the *Antoinette (Toni) Lippert Award* which is given to a person who is a visionary advocate, with compassion and commitment toward promoting positive change in the lives of people challenged by significant disabilities. Dr. Stuart Schleien, the project director, has received the *Theodore and Franklin Roosevelt Award for Excellence in Recreation and Park Research,* given for an individual whose contributions to recreation and park research has significantly advanced the cause of the recreation movement. For further information, call the Research and Training Center at The University of Minnesota (Institute on Community Integration) at **612-624-6328** or e-mail: **lakin001@maroon.tc.umn.edu**

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How To Contact The National Center For The Dissemination Of Disability Research

Call us

1-800-266-1832 or 512-476-6861 Voice/Text Telephone from 8 A.M.–NOON and 1–5 P.M. Central Time, Monday–Friday (except holidays) or record a message 24 hr./day

Use a computer modem

to contact us through the Internet at our e-mail address: jwestbro@sedl.org or use our URL:http://www.ncddr.org/

Write to NCDDR

National Center for the Dissemination of Disability Research
Southwest Educational Development Laboratory
211 East Seventh Street, Suite 400, Austin, Texas 78701-3281

Visit us in downtown Austin, Texas

at the Southwest Tower, 7th and Brazos St.
one block east of Congress Avenue
8 A.M.–NOON and 1–5 P.M. Central Time, Monday–Friday (except holidays)

Fax your request to us

at 512-476-2286

Southwest Educational Development Laboratory SEDL | NIDRR National Institute on Disability and Rehabilitation Research

THE

Research Exchange

NATIONAL CENTER FOR THE DISSEMINATION OF DISABILITY RESEARCH

VOLUME 2, NUMBER 1 1997

***The Research Exchange* is available in alternate formats upon request.**

At a Glance

A WORD FROM THE DIRECTOR

The Internet

The Internet represents a mind-boggling array of informational and entertainment sites. Many people have expressed the feeling that the Internet and its ever-changing World Wide Web (WWW) of resources, is THE way in which all people of the future will communicate, buy groceries, pay bills, and publish their new novels.

If the present is of any assistance in predicting the future, however, we should be cautious in reaching such sweeping conclusions. Periodical publishers, such as *Newsweek*, for example, have learned that its readers do not expect or want a WWW reproduction of a readily-available paper version of their periodicals. Instead, readers expect and want Internet sites to contain new and different information that is considered to be more timely, more focused, and more relevant to personal interests.

The Internet should not be viewed as an electronic form of what has already been produced on paper. If this is the scenario under which your WWW site is developed, you will miss the richness of the Internet. Internet sites are fellow members of an astounding network of related resources. Information you n your Internet site should

continued on page 2

Accessible Information on the World Wide Web

The accessibility of information on the Internet and the World Wide Web (WWW) is a topic that is complex and often misunderstood. For many, even the terms "Internet" and "World Wide Web" are confusing. The *Internet* is often referred to as the "information superhighway." Not truly a network itself, it is the growing linkage of networks of computers, across the country and around the world, that facilitates the transmission of information to many places. The Internet grew from the ARPANET, originally funded by the United States government to help facilitate military computer communication. In 1969, the first four sites were connected at the Stanford Research Institute, University of California at Los Angeles, University of California at Santa Barbara, and the University of Utah. These networks grew as researchers at universities and other research centers around the country became involved. Communication by computer increased, using the protocols developed through government contracts which allowed transmitting information without a direct connection to the host computer. Federal funding for the ARPANET ceased in 1990 (Gromov, 1996).

The WWW (or Web) was developed to make information available regardless of the location and the differences in computer platform, hardware, and software being used. Tim Berners-Lee developed the first protocols for the WWW in 1989 at the European Laboratory for Particle Physics, known as CERN (formerly Centre European pour la Recherche Nucleaire). The use of a common code (called Hyper Text Markup Language, or HTML), allows information on a host computer, or server, to be accessed by any other computer that has appropriate hardware and browser software (such as Netscape Navigator, Internet Explorer, Lynx, etc.) to link to the Internet (Gromov, 1996).

The concept of accessibility encompasses both *technical* and *content* aspects. Some of the newer developments in hardware and software capabilities may actually have the effect of slowing down or impeding access for many people. For example, personal computers with screen readers enable blind individuals to have equal access to a world of information and communication. The expanded use of graphics, animation, tables, and split windows or frames with the latest browsers have served to limit Web access for people using screen readers, as well as those who have older text-based browser software.

The development of the Internet is often identified as a great opportunity for people with disabilities to have access to information and communication on a more 'level playing field.' Limited physical access to facilities and format obstacles can be overcome through computer networking. In order for this opportunity to be fulfilled, information providers must attend to the varied needs of consumers and keep in mind that not all users will have access to electronic media, or have the same type of access (Hagins, 1995).

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The Internet, *continued from page 1*

benefit from these resources by building links or connections with relevant information that is located elsewhere. Your site should not reproduce information that is available elsewhere but rather link to it within the context of your unique information. These types of connections expand the value of your information rather than detract from it.

The richness of your Internet site can also be expanded through the use of graphics and related illustrative material. The inclusion of this material may, however, cause accessibility problems for people that have programmed their browsers to orally read HTML text, for example. No readers available today can "read" a photograph, an animated illustration, or even, many times, an ordinary-looking table of data.

Special care is required to make sure that everything included in your site has something to communicate. Once this is accomplished, your site should be able to communicate its information in several ways at the same time—for example, you should offer a text description of a pie chart of data. Accessibility of your site's information does not automatically occur when using the Internet. Your site must be constructed to afford maximal accessibility to all "viewers" including those with disabilities that may use special equipment or computer configurations to assist them in achieving access.

Lastly, I must say that ways to maximize the "communication power" of your Internet site and maintain maximum accessibility for all viewers is, at best, fuzzy. For example, the NCDDR was recently contacted by an Internet site developer that wanted to make his site easier to read by people with low vision by creating the site's information in large, capital print in bold type. This design actually complicated the ability of people with low vision and those using special browser and reader configurations to access his site's information.

Almost half of the current NIDRR grantees have sites on the WWW. If you maintain such a site, you should assume that it serves as a model to others interested in learning about and/or creating an accessible Internet site. This issue of *The Research Exchange* is designed to help you in meeting this accessibility challenge.

John D. Westbrook
Director

Accessible Information on the

continued from page 1

It is not easy to ensure that the content of a Web site is truly appropriate. The versatility of the Web allows information to be made available at different levels, in effect, satisfying the needs of multiple audiences. The findings of a research study may be presented in summary form for a non-scientific user, while more detailed interpretations and even access to data may be available for other researchers. The WWW provides creative opportunities within a structure that is an evolving medium, but those providing information should keep in mind that all users are different, with unique needs.

Researchers are embracing the Web as an alternate format for communication and information dissemination. As this multi-medium can employ graphics, animation, and sound in addition to text, it is often tempting to use these features to make a Web site exciting, attractive, and flashy, but it may not enhance the content presented and, in fact, may prevent many users from reaching the content. On the other hand, always using straight text does not take advantage of the capabilities of the medium. Information to be shared on the WWW should be considered from different viewpoints so that its expression is the most effective it can be. The interactive and linking capabilities of the Internet and Web can be exploited to make the content different from that of a static paper text document.

Who Uses the Internet?

Recent studies vary greatly in their reports regarding who makes up the Internet audience. The New Networks Institute (NNI) reviewed a number of studies from 1994-1996 and found variances due to definitions and what was actually studied, in addition to methods used for collecting data. For example, households, adults over 16, families, computers, and subscriptions were all counted in different surveys. 'Access' included electronic mail, bulletin boards, the Internet, WWW, as well as commercial accounts. Methods included random telephone surveys, self-selecting online surveys, and estimates based on other figures (NNI, 1996). Totals from 5.8 million 'adults connected to the Internet' to 50 million 'adults over 16 with access to the Net' were reported (NNI, 1996). Surveys conducted by Louis Harris (11/96) and IntelliQuest (7/96) both reported 35 million U.S. adult Internet users (CyberAtlas, 1996; NNI, 1996).

Some surveys indicated users are more likely to be males in their early 30's, better educated, and employed in computer and technology fields. English is the primary language found on over 90% of the Internet (GVU, 1996). Over time, these numbers have changed to reflect more variety and diversity among Internet users. (GVU, 1996; NNI, 1996). Disability data were not reported in any of the studies reviewed.

The Research Exchange, a newsletter to promote the effective dissemination and utilization of disability research outcomes, is published quarterly by the National Center for the Dissemination of Disability Research (NCDDR) which is operated by the Southwest Educational Development Laboratory (SEDL). Neither SEDL nor the NCDDR discriminate on the basis of age, sex, race, color, creed, religion, national origin, sexual orientation, marital or veteran status, or the presence of a disability. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities for all individuals in all employment matters. The contents of this newsletter were developed under a grant (#H133D50016) of $500,000 per project year from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education (ED). However, these contents do not necessarily represent the policy of SEDL, NIDRR, or the ED; do not assume endorsement by the Federal Government.

An electronic version of *The Research Exchange*, Volume 2, Number 1 is available on the Internet at URL http://www.ncddr.org/

***The Research Exchange* is available in alternate formats upon request.**

John Westbrook, *Director*
Lin Harris, *Information Services Technician*
Joann Starks, *Research Specialist*
Jane Thurmond, *Graphic Design*

World Wide Web

Estimates of the numbers of Americans with disabilities vary depending on the criteria used and the extent of limitations due to disabling conditions. The Disability Statistics Rehabilitation Research and Training Center (a NIDRR grantee located at the University of California, San Francisco) proposed a figure of 36.1 million, or 14.5 percent of the total population, based on data from the 1990 National Health Interview Survey and additional sources (LaPlante, 1992). Numbers in the range of 50 million people have also been cited (Hagins, 1995). One source (unverified) suggested that only five percent of people with disabilities have computers, compared with 30 percent of the general population (Hagins, 1995). If correct, this would still yield from 1.8 to 2.5 million people with disabilities who have computers.

On A Roll, a live weekly syndicated radio talk show on life and disability issues, is trying to identify at least one million regular users of the Internet who have a disability or chronic health condition, or a direct and personal interest in disability issues. The purpose of the research being carried out in February and March, 1997 is to "justify to the major media, advertisers, content developers, hardware and software manufacturers, legislators and others that people with disabilities are a viable consumer market and political force that cannot be ignored" (Smith & Kimball, 1997).

The NCDDR carried out field tests with consumers and administrators affiliated with 12 Centers for Independent Living (CILs) to learn more about how consumers with disabilities receive and like to receive information. Only four percent of consumers reported using the Internet 'Very Often' to get information. About 12% reported using the Internet 'Often,' with another 12% using it only 'Once or Twice' to get information. Fully 70% of consumers reported 'Never' getting information from the Internet, with 2% reporting 'Don't Know' or no answer. This contrasted with CIL administrators, who reported 17% use the Internet 'Very Often,' 41% 'Often,' 25% 'Once or Twice,' and 17% 'Never' (NCDDR, 1997). Following these results in a graphical format:

Do you ever get information from the Internet?

	Number			Percent		
Response	**Both**	**Admin.**	**Cons.**	**Both**	**Admin.**	**Cons.**
Very often	5	2	3	6	17	4
Often	13	5	8	16	41	12
Only once or twice	11	3	8	14	25	12
Never	50	2	48	62	17	70
Don't Know	1	–	1	1	–	1
No answer	1	–	1	1	–	1
TOTALS	81	12	69	100	100	100

Anyone with access to a computer with the minimum technical requirements can find information on the Web. In order for it to be useful, the developers of Web sites must consider who their audiences may be, and prepare Web pages with attention to both technology and content. Many organizations, including several grantees funded through NIDRR, are focusing on ways to help increase accessibility of information on the Internet. This newsletter will provide NIDRR grantees with some general conceptual guidelines for designing World Wide Web sites with accessibility in mind, as well as some specific examples of modifications that can be made to increase accessibility for visitors with disabilities. A listing of resources available on the WWW is also included.

Universal Design and Universal Access

The concepts of *Universal Design* and *Universal Access* focus on making materials/space available to and usable by as many people as possible. This perspective looks at trying to accommodate the greatest number of people in a cost-effective way so that it is not necessary to develop special, alternative technologies for a few. This may be expressed in areas such as housing, transportation, and communication. This is a definition used by a NIDRR grantee at the Center for Universal Design (CUD) at North Carolina State University:

> "Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The intent of the universal design concept is to simplify life for everyone by making products, communications, and the built environment more usable by more people at little or no extra cost. The universal design concept targets all people of all ages, sizes, and abilities" (CUD, 1996).

Another NIDRR grantee, The Trace Center (1995) at the University of Wisconsin, states:

> "It must be acknowledged that the principles of universal design in no way comprise all criteria for good design, only universally usable design. Certainly, other factors are important, such as aesthetics, cost, safety, gender and cultural appropriateness, and these aspects should be taken into consideration as well when designing."

The WWW is not just a tool for researchers, academics, and more recently, the business world. It is potentially available to anyone, and those making information available on the Web should strive to make it accessible as well. Increasing accessibility does not mean the site will be less useful for non-disabled viewers. New advances in

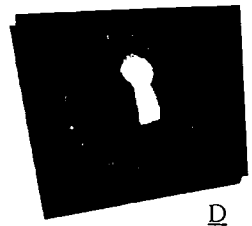
technology should not leave Web users with disabilities behind. Using universal design as a guiding principle, Web designers can provide sites with high quality content that also provide a similar informational experience as possible for all users.

Web Access Symbol

A Web Access Symbol has been developed by the CPB/WGBH National Center for Accessible Media (NCAM), a NIDRR grantee, to denote that a site reflects accessibility features to accommodate the needs of users with disabilities. At this time, there are no specific eligibility criteria for displaying the symbol. A site displaying the Web Access Symbol has not been verified as accessible, but demonstrates intent to make the site accessible. As of December 1996, over 87 sites had reported to NCAM that they are displaying the symbol. NIDRR grantee sites listed in addition to NCAM include the ADA Technical Assistance Coordinator (KRA Corporation) and the Trace Center.

The NCDDR is currently working toward development of criteria for accessibility of its WWW site, and intends to use the Web Access Symbol after that accomplishment. We would like to encourage all grantees with Web sites, as well as those in the process of planning and developing sites, to consider the needs of consumers with disabilities and make appropriate changes or modifications to allow all potential users to access and use the information provided.

Web Access Symbol (for people with disabilities)



D

NCAM sponsored a contest to develop the Web Access symbol. The winning image, selected from a field of 17 entries, was created by Stormship Studios of Boston, Massachusetts. When used, the Web Access Symbol should always be accompanied by its description and alternate text tag, which displays when the image is not loaded.

Description:
A globe, marked with a grid, tilts at an angle. A keyhole is cut into its surface.

ALT="Web Access Symbol (for people with disabilities)"

For more information contact:

CPB/WGBH National Center for Accessible Media
WGBH Educational Foundation
125 Western Avenue
Boston, MA 02134
http://www.boston.com/wgbh/pages/ncam/ncamhome.html

Speech Friendly Ribbon Award

The Speech Friendly Ribbon Award was developed by Magical Mist Creations to recognize those sites that are completely accessible to users of non-graphical browsers and screen reading software. Over 190 sites have received the Speech Friendly Ribbon Award, including two NIDRR-funded projects, the RERC on Technology Evaluation and Transfer/AZ tech (SUNY, Buffalo) and the RRTC on Blindness and Low Vision (Mississippi State University).

Web developers may request that their site be reviewed for accessibility. Magical Mist also offers a guide to creating speech friendly sites. If you would like to submit a site for consideration, be sure to review the guide first to ensure that you have implemented all appropriate alternatives to make it accessible. Following are the criteria that must be met in order for a site to be deemed "speech friendly:"

- Links which are embedded in paragraphs are placed one to a line and clearly labeled.
- Links are placed on individual lines for ease of navigation, or a text index is offered.
- All images and image links are ALT-tagged.
- Forms are formatted for ease of navigation and an e-mail alternative is offered.
- If a site is extremely graphical in nature a "text-only" alternative is offered that meets these criteria.
- If frames are used, the no frames option is available, and individual pages are offered so that blind individuals who access via graphical browsers can choose the individual pages.

For more information contact:

Magical Mist Creations
2400 E. Lincoln #150
Anaheim, CA 92806
(714) 490-1011
http://www.wwwebit.com/magical-mist/

General Guidelines for Improving Accessibility of World Wide Web Pages

Good Web page design responds to the needs of viewers with disabilities. A commitment to making a site accessible requires some additional planning and testing, in addition to specific changes to documents or files. Most changes or additions to increase accessibility are small, and can be easily implemented. Making a Web page accessible should be routinely incorporated as a normal part of design and development rather than viewed as an afterthought.

Purpose of Your Web Site

The purpose and content of your site will help determine its design. You may want your site to heighten awareness of your NIDRR project or institution, and explain your goals, activities, and how to contact the staff. Its purpose may be to demonstrate or share information gathered from your research, or to provide free access to products developed through your project's work. Full-text documents can be made available, as well as product catalogs and ordering information. You may decide that your Web site will be interactive and invite input from users.

Design your site to be inviting and to take advantage of the capabilities of the [illegible] our site must help potential users locate relevant information they may need, and encourage them to return because of the content they find. When you design your site, make allowances for it to grow. You must keep it updated, so changes should be planned for and not viewed as disruptive.

A clear, well-defined purpose will serve to guide site development. As ideas for content or specific pages are proposed, checking to ensure they further or fit in with the stated purpose will make the site cohesive and focused.

Audience

The audience of your site will also be determined in part by its design and content. Asking for input from potential users in the planning stages will assist in ensuring your site achieves its purpose. If you have information to offer people with disabilities, your site must be accessible for those members of your audience. You do not want to prevent potential users from navigating your site, or to alienate them by ignoring their needs. A site with numerous graphic images may be confusing for people who are using a screen reader, as well as others who use text-based browsers or who (due to the download time involved) turn graphics loading off. Numerous audio and video clips may not be accessible to users who are deaf or hard of hearing, or to people lacking software or hardware to access or play sounds and movies. These features may be attractive or useful additions for some users, but alternatives such as text files and transcripts should also be made available in order to welcome all potential viewers and users of the information at your site.

It may be helpful to add features to help identify your audience, those who actually visit your site. Software is available to count the number and origin of users and the pages most often viewed. A feedback form, survey, or guestbook will also help you learn more about your audience.

Hardware/Software

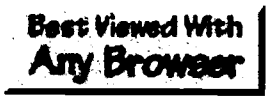
As technology continues to advance, many access problems may be solved, and new ones may appear. One of the advantages of the Web is that users with a variety of hardware are able to access information that is provided by different platforms (such as UNIX, DOS, or Macintosh). The platform used for the server has certain capabilities that define how and how much information will be 'uploaded' to the Internet. Machines with smaller capacity or slower capabilities may affect the time it takes a user to access or download information. Server capability also determines how many visitors can access the site at one time. It would not be prudent to design a site with extensive use of graphics, audio, and video if the capacity of the server will impede users' access to information.

Differences in users' equipment and software will also affect how they receive information. Although developers have no control over how users will access their site, you can make an effort to accommodate those with different needs. Users with disabilities may avoid your site if the initial pages are too difficult to navigate. People with older, slower equipment will become frustrated waiting for long files or large graphics to load. This is the origin of the term 'World Wide Wait.'

The way a user accesses the Internet affects his or her ability to view documents. People who use commercial services such as America OnLine, Compuserve, or Prodigy will have different capabilities from those who reach the Internet from universities, business or technical sites, or others with independent Internet Service Providers (ISPs).

Browser software determines how Web pages appear to each user. The pages at your site will present some variations depending on the browser used by the viewer. A text-based browser such as Lynx will show phrases such as [IMAGE], [INLINE], or [LINK] when graphics are not able to load. This lets the user know something is there, but it does not identify the item in a way that informs the user. Modifications are needed to identify graphics. Different versions of browsers like Netscape Navigator, Microsoft Internet Explorer, and Mosaic also have different capabilities. It is helpful to review your pages with several different browsers to ensure that all users can view what you intended to produce.

Some Web sites inform visitors "This site is best viewed with "XXX Browser, Version 1.x." Others even include information about fonts, colors, and resolution in order to view the site at its best. Instead of informing users how they should change their settings to meet a site's development standards, a more universal design approach is to make the site compatible with a variety of browsers. The 'Best Viewed With Any Browser' (developed by Cari D. Burstein, http://server.berkeley.edu/~cdaveb/anybrowser.html) campaign supports using standard HTML notation that is properly interpreted by all browsers. Viewers with disabilities will also benefit from this approach.



Special software has been developed for users with disabilities, including browsers. For example, The Productivity Works, Inc. has developed *pwWebSpeak*, a non-visual browser with a built-in speech processor and enlarging format that interprets from the HTML code rather than what appears on the screen (Lazarro, 1996; Sreenivasan, 1996). Microsoft Internet Explorer Version 3.0 uses the *Active Accessibility* program, also developed by Microsoft, to facilitate use of screen reader software, synthesizers, Braille displays and large print programs (Lazzaro, 1996). Netscape is also working to increase the capabilities of its Navigator browser to meet the needs of users with disabilities (Sreenivasan, 1996). The goal of the Mosaic Access Project is to identify some of the major barriers people with disabilities encounter on the Web, and where feasible, design and implement solutions.

Layout

An organized layout is critical for a well-planned site. The layout should serve to orient the user to where information is likely to be found, and to facilitate moving through the site. Keeping similar features (including navigation aids such as Back, Forward, Previous, Next, Home, etc.) in the same place on all pages helps all users, and especially those with disabilities. A branching tree structure allows the site to grow as things are added following a logical format rather than random expansion. The layout should not be too crowded, or include pages with little content or nothing but links. Pages with only graphics should also be avoided.

The proper size of a Web page document is difficult to determine. Downloading time is one way to judge the size of a document, although this will also vary depending on the capabilities of the server and user. A download time of more than 30 seconds may cause some users to stop a download. More than ten screens of information (again, this will vary!) can also turn many users off. If it is necessary to save many separate parts and then integrate them to be able to print a complete product, the individual parts may be considered "too short." On the other hand, one large document may be too slow in loading, or may cause readers to scroll through, looking for what is important to them. One option is to provide a link to a file containing a complete plain-text (ASCII) version of the document. This file would be more accessible for screen readers, and an end-user could easily download it for printing.

Color/Text

Colors should contrast well with the lettering to maintain readability. Select colors that will make your pages easy to read by people with color blindness. One good test is to see if your pages are readable in black and white. In most cases, it is advisable to avoid background (wallpaper) patterns as the images and/or colors can impede accessibility for people with limited vision or who use screen readers.

Text should be clear and uniform for easiest reading. Using a large font is not necessary, because most viewers will adjust the fonts on their browsers and a large font might then be too large to provide continuity if only a few words are visible at a time.

Check your Pages

It is easy to test your WWW pages using a variety of text browsers and platforms (PC, MAC, UNIX). Even if you use a graphical browser, you can see how a page will look to others by de-selecting image loading under 'Preferences,' and viewing your pages again. There are a number of sites on the Web that convert a document to show how it will appear using the text-based Lynx browser. Other validation sites available can assist you in assessing the "correctness" of HTML code and its accessibility.

Bobby is an example of new technology that is available to you.

Bobby is a graphical web-based program designed to help make Web pages accessible by the largest number of people. A free service, it was developed by the Center for Applied Special Technology (CAST) Universal Design Lab staff and Josh Krieger. Founded in 1984, CAST is a not-for-profit organization whose mission is to expand opportunities for individuals with disabilities through innovative computer technology.

Bobby performs a series of tests to determine the ways in which a Web page is inaccessible to people with blindness, deafness or physical disabilities. It identifies problems and gives Warnings and Suggestions to correct them. In addition, Bobby will help find design problems which prevent a Web page from being displayed correctly on different Web browsers (America On-Line, Netscape Navigator, Mosaic, Microsoft Explorer, Lynx) without having to individually test the page with each browser.

Interactivity

The ability to get input from users is an important aspect of the World Wide Web. The purpose and layout of the site will help determine if input from users is encouraged or discouraged. One way to ask for input is to provide links for electronic mail ("mailto"). Using an animated graphic for that purpose may not allow users who are blind to find and use the e-mail link unless a standard mailto link is also available.

The use of forms is another way Web sites invite input from users. Some text-based browsers cannot use forms, although more recent versions of Lynx have resolved that issue. A separate text-based form that can be completed and sent by electronic mail, or printed and faxed or sent by surface mail, gives an opportunity for users without forms capability to respond.

Providing no avenue for feedback by users indicates that the opinions of the viewers are not valued. It is important to facilitate feedback from users with disabilities, including feedback on the accessibility your site.

Linking to other sites

One of the powerful tools of the Web is the ability to link to other documents and sites through 'hyperlinks' that allow users to move rapidly to sites all around the globe. It is not necessary to reproduce information at your site that is available elsewhere—just provide a link. In thinking of accessibility, though, it is important to consider the accessibility of those sites to which you may want to link. In some cases, you might decide not to link to a site where people with disabilities may have difficulty navigating. It would also be helpful to alert users that some linked sites may not be accessible.

Too many links throughout your documents may encourage visitors to 'surf' and not return to your pages. Within your site, be sure to give users a way to return to the place they were before leaving by providing a return link. Many lists of links are not recommended. Content is an important reason for hosting a site, and the links should enhance the content you present.

One problem with links relates to the evolving nature of the Internet and the Web. As newer hardware is installed or sites are reorganized, the Web address (Uniform Resource Locator, or URL) of a document or an entire site may change. Without follow-up, the links you provide in your site may not stay active.

Maintenance

A site should continually evolve; it should not be a static product. In order for visitors to want to return to the site, they must be made aware of the new or updated items they can find. If information is loaded onto the server and then never modified or updated, in a short time, it will not attract new or repeat visitors. To be useful, the site must have interesting, up-to-date information. It is important that the date of the most recent revision is available on each document. As technology advances, you should plan to make improvements at your site to enhance accessibility for users with disabilities.

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Information for Web Page Developers

Accessibility Design Considerations and Examples

The major areas to be discussed are graphics, image maps, text links, audio, video, frames and tables, and forms.

Many of the following examples are drawn from:

[1] Vanderheiden, G.C., Chisholm, W.A., & Ewers, N. (1996, April). *HTML Quick Reference Page*. Madison, WI: Trace Center. [Online] Available: http://trace.wisc.edu/text/guidelns/htmlgide/htmlgide.pos/quickref.html

[2] Starling Access Services. (1997). *Accessible Web page design: General design tips*. [Online] Available: http://www.igs.net/~starling/acc/acgen.htm

[3] Gieszczykiewic, F.M. (1996, November). *A plea for Lynx friendliness*, V1.09, (Personal communication by electronic mail).

Note: the numbers [1], [2], and [3] identify the source of various suggestions for adaptations.

Graphics

Graphics include icons (small representative pictures) as well as pictures, drawings, and charts. The addition of graphics to a Web page can increase interest, attractiveness, and should enhance the understanding of content. Graphics with no real purpose should be avoided. They add to the time needed to load and view a document, and in some cases, may cause the document to be inaccessible to many computer users. These can include people without graphics-capable browsers, as well as users who may be blind and use a screen reader to access information. Others in this group include persons who have the graphics capabilities of their browsers turned off to gain speed on the Web (estimated at 30%) [3].

Most browsers have the capability of alternate text references (ALT tags) to identify graphics that are not visible. This text only appears when the image is not shown. The ALT= tag should be used to simulate the *function* of the image it replaces rather than to provide a description of the icon, except in the case of a unique or large image [3]. Descriptions should be short and functional [1].

Examples of the ALT= tag:

The HTML code to place the NCDDR's logo on a page is <IMG SRC="ncddrlogo.gif">. For non-graphics users, this will appear as [INLINE], which indicates a graphic is there, but provides no information about it. Changing the HTML code to <IMG SRC="ncddrlogo.gif" ALT="NCDDR Logo"> would reveal the words "NCDDR Logo" for users who cannot see the graphic. The words are read by screen readers. Following are some specific examples of use of graphics and ALT tags to describe them.

1. If a graphic icon is a bullet:

<IMG SRC="icon.gif" ALT="*">
<IMG SRC="icon.gif" ALT="o">

The bullet icon will appear as an asterisk in the first example [3]; as a small letter o in the second [1]. Both are useable with screen readers.

2. If it's a line:

<IMG SRC="line.gif" ALT="————"> <IMG SRC="line.gif" ALT="horizontal line">

A line of dashes will appear in the first example [3], the words "horizontal line" in the second [1].

3. For a unique picture or large image:

<IMG SRC="icon.gif" ALT="[Description–type–size in KB]">

For example. ALT="monalisa GIF–128 KB" would describe a 128 KB GIF image of the Mona Lisa. A description should also be made available [3].

4. If it's a logo:

<IMG SRC="icon.gif" ALT="Project XYZ">

There is no real benefit in describing the logo here [3].

5. if it's a capital letter in a word:

<IMG SRC="W.gif" ALT="W">

Identifying the letter will be more helpful than just letting users know it is a GIF image [3].

6. If you're using a counter that outputs the number as an image:

<IMG SRC="count.cgi" ALT="[counter number]">

This lets the viewer know that a number is there, and why [3].

7. If an image is used as a link:

<A HREF="email.html"> <IMG SRC="mailus.gif">
 gives "[LINK]"

but

<A HREF="email.html"> <IMG SRC="mailus.gif" ALT="Send us E-Mail">
gives "Send us E-Mail" as the link.

Users without graphics capabilities will see only [LINK] if there is no ALT text explanation. The words between the quotation marks in the ALT text will appear as the link [3].

8. If you don't want to show anything:

<IMG SRC="icon.gif" ALT=" ">

If there is nothing between the quotation marks, nothing will be shown [3].

A separate page may be added to provide a description of some graphic images. Include a text anchor to a page describing the graphic (use a capital "D" or a short phrase located next to the picture such as 'description of graphic name') which takes the user to a page with a full description of significant graphic elements [1].

Another alternative is to develop a text-only page which translates all graphics and information into text. This can provide a fast access method for all users. You may have text-only pages for a few specific pages or all pages at your site. Users should be able to switch back and forth between text-only and graphic versions of the page. This is the most complex adaptation, and is not needed in many cases [1].

Use of HTML

Avoid non-standard HTML formats and special tags. They often cause problems for Braille translation, screen readers and some browsers [1]. Don't use the <blink> tag: some screen-readers lock up when they encounter blinking text. Beyond concerns about accessibility, most HTML style guides warn designers against using the <blink> tag. The consensus is that it is more annoying than eye-catching [2].

Always provide HTML, or at least ASCII forms, of all documents presented in PDF, PS, WORD or other formats to allow users without that software to access the information [1].

End all sentences, headers and items within a list with a period or other suitable punctuation. Screen-readers interpret punctuation for the listener. To a sighted user, headers are separated and emphasized to stand out. Lists, headings or titles without punctuation may be run together by a screen-reader, making it difficult for the listener to understand.

The following suggestions make information accessible for all users, not only those with disabilities. It is helpful to have a standard footer on all pages, describing:

1. Information on who wrote it and when it was last updated.
2. A link to the home page (in case someone arrives by way of a search engine, by a direct link from another site, or a newsgroup.)
3. A link to Disclaimer and Copyright pages (which all sites should have.)
4. The URL of the page (especially helpful if you print a document and your browser does not print the URL, when you find you need to revisit a site.)

Movies/Video Clips

A description of the sounds and dialogue of movies should be provided. Some software (e.g. Quicktime) allows the addition of text tracks [1]. If an alternate sound track is available, an audio description can be added to the regular audio track for users with visual disabilities. Or, a second copy of the movie with descriptive video can be prepared. Again, be sure to identify the type of movie format and the size of the file so that users may determine if they have the capability to access the movie. An alternate text file with a description of the movie as well as a transcript should also be provided [1].

Frames, Tables, and Graphs

HTML allows a developer to include an alternate set of HTML instructions to be executed or displayed if the end-user's browser does not support FRAMES. Frames are really separate pages, each with its own URL, that appear together. Including an effective alternative to the FRAME page is equivalent to including ALT="text" with a graphic image it makes your critical information available to everyone. Using TABLES as an alternative to FRAMES is not a good idea, since tables are also inaccessible to many users [2].

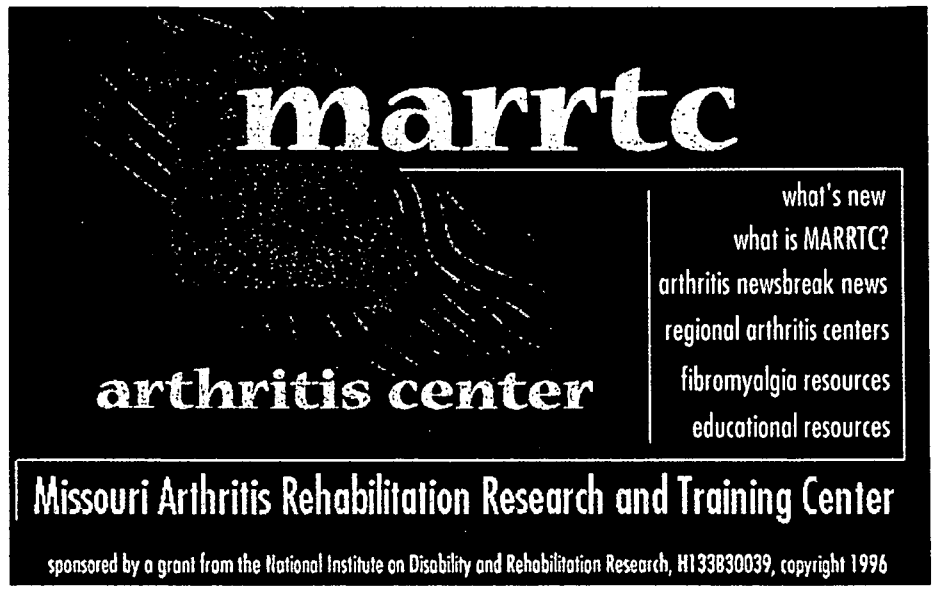
It is very difficult to make information in columns in a table accessible to a screen reader, which reads across the page. It is best to avoid the use of tables with columns, or, provide a page with lists to make the same information available in an alternate format [2].

If a graph does not make all of its elements and relationships of those elements clear, you should provide a link for appropriate corresponding descriptive text. In a case where the ALT="text" that accompanies the graph does not give enough useful information to the viewer, provide alternate text to describe your chart or graph [2].

Image Maps

An image map is a graphic image that provides a direct link to another page when it, or a specific part of it, is selected. Unless a text alternative is provided for the image map, some people will not be able to navigate your site. A simple list of links at the bottom of the screen will avoid blocking off access [3]. Deleting the image map is not necessary, as the graphic aid of an image map may be especially useful for some viewers with learning or cognitive disabilities. This will be most useful if the same pattern is followed throughout the site [2]. Providing both graphic and text options is best for enhancing accessibility. In some cases, offering a separate text-only page of the links would be most appropriate. Again, viewers should be able to easily switch between graphics and text-only pages [1].

Example of Image Map with Links



What's New | What is MARRTC | Arthritis NewsBreak | Regional Arthritis Centers | Fibromyalgia Resources | Educational Resources | Text only

Text Anchors (Links)

Text anchors are words or phrases within a document that link the user to another location. It may be a part of the original document, a new document within the original site, or may be at a different site. A text phrase that is used as a link to another document should make sense if it stands alone or is read out of context. Just using one word to identify a link may not help the user know if the link is important to their understanding of information at the site.

A series of links on one line should be separated by a vertical bar (|) to ensure that screen readers can differentiate between links [1]. A list of links that is vertical rather than horizontal may be more accessible for persons using screen readers, which read from right to left on one line at a time [2].

Anchor Links in a horizontal list are separated by vertical bars (|)

[1]

What's New | What is MARRTC | Arthritis NewsBreak | Regional Arthritis Centers | Fibromyalgia Resources | Educational Resources | Text only

Anchor Links in a vertical, rather than horizontal, list

[2]

What's New
What is MARRTC
Arthritis NewsBreak
Regional Arthritis Centers
Fibromyalgia Resources
Educational Resources
Text only

Forms

For users who cannot readily access forms where blanks are to be filled in, provide a form which can be downloaded and then mailed, faxed, or electronically mailed. This may be the same form or an alternate version, depending on the type and quantity of information requested. Or, give a phone number someone can call to provide the requested information. [1].

Audio

Audio clips can be used to provide descriptive information as an accessible alternative for persons who are blind [2]. Audio clips will not be accessible to people who are deaf of hard of hearing. A page should be made available with a description or transcript of the audio file. This is also useful to viewers who do not have access to necessary hardware or helper software to listen to audio materials [1]. To improve accessibility, be sure to identify the audio format (.WAV, .AU, .SND, etc.) and the size of the file [2].

Search engines

The Web is huge, and growing. In early 1996, it was estimated that some 19 million pages were available through the WWW, with an expected doubling in size every four months. This would yield over 150 million pages at the beginning of 1997 (Venditto, 1996). Search engines are automated tools that sift through the seemingly limitless contents of the Web for specific information. In addition, sites are registered with WWW directories such as Yahoo and Magellan.

Search engines are a type of automated software (called spiders) that cover URLs across the Web in search of terms specified by the user. Some of the spiders visit every site and record the URL and text of all pages, others check to see which sites are most popular and log only information such as the URL address or title. Using slightly different approaches and search criteria, search engines yield different information.

In May 1996, *Internet World* reviewed a number of free search engines available on the Web. Following is a brief summary of those results.

Alta Vista: With 21 million fully indexed pages, Alta Vista claims to be the largest of the databases for searching the Web, however, many of the references returned were irrelevant or had expired links. *Most comprehensive results.*

Excite: Excite provides both a search engine and a Web directory. Found to be one of the best databases at staying current; does not display URLs in its results. 1.5 million full-text pages.

InfoSeek Guide: Has the 'smartest' search tools which find more relevant sites. Provides 'Similar Pages' links. 1 million full-text pages. *Most relevant results.*

Lycos: One of the first search tools on the Web. It continues to add to its database and reports results in URLs and abstracts (of 19 million pages). Not the fastest or most extensive, b eable.

Open Text: Offers many search options, and allows users to weigh the relevancy of terms to refine the search. 1.5 million full-text pages (to expand in 1997 to 10 million pages).

WebCrawler: Quick searches; gives URL addresses and page titles only. Data base is updated regularly; 500,000 of the 'most popular' pages.

Placing a search engine at your site can also make it easier for users to find information they are looking for. A number of free and shareware engines are available.

References / Resources

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Venditto, G. (1996, May). Search engine showdown. Internet World, 7(5), 79-86. [Online] Available: http:www.iw.com/1996/05/showdown.html

Software is available to help you maintain and fine-tune your site.

Wusage
http://www.boutell.com/wusage/
provides usage statistics for Web servers, including the number and origin of accesses (hits) to the site, which pages were accessed most, and graphs of some of the statistics gathered.

Copyright 1996, by Boutell.Com, Inc.
P.O. Box 20837
Seattle, WA 98102
Phone/Fax +1 206.325.3009
wusage@boutell.com

MOMspider
http://www.ics.uci.edu/pub/websoft/MOMspider/
Multi-owned Maintenance (MOM) Spider is a Web-roaming robot that specializes in the maintenance of distributed hypertext infostructures (i.e. wide-area webs). It lists any links that were broken, moved, or exhibited any other access problems.

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Annotated WWW Resource List

This is a small sampling of the resources available on the World Wide Web (WWW). Each listing is accompanied by a brief description. These sites provide useful information that supports the development of effective, accessible WWW pages.

Internet/WWW—General

Introduction to the Internet
http://www.acc.org/am/acc96/itc/basic/
These pages are intended to be a basic overview of the communication and information services available to novice users of the Internet.
David A. Tong, Ph.D. Copyright © 1995-1996. All Rights Reserved. University of Oklahoma Health Sciences Center, Oklahoma City, OK 73104

Web Design Group
http://www.htmlhelp.com/
The Web Design Group was founded to promote the development of non-browser-specific, non-resolution-specific, creative and informative sites that are accessible to all users worldwide.

World Wide Web Primer
http://www.vuw.ac.nz/~gnat/ideas/www-primer.html
Written in 1994 by Nathan Torkington, this primer still provides a good general overview of the Web.

WWW & HTML Developer's JumpStation
http://oneworld.wa.com/htmldev/devpage/dev-page.html
This resource page is maintained by SingNet and hosted by OneWorld Information Services.

WWW Tools and Places
http://mambo.ucsc.edu/psl/wwwtp.html
A listing of links about the WWW, search engines, interesting sites, government sites, etc.

HTML Information

A Beginner's Guide to HTML
http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html
The NCSA Beginner's Guide is still the most frequently requested file on NCSA's Web

HTML Overview
http://www.ora.com/oracom/inet/html.html
by Russ Jones from *Managing Internet Information Services*, O'Reilly — http://www.ora.com/catalog/miis/

General Design and Related Issues

Computers and the Disabled
http://www.pctv.com/pctv/shows/chronicles/96-97/1424/1424.html
This issue of *Computer Chronicles* highlights various perspectives from different authors on computers and people disabilities.

Internet World
http://www.internetworld.com/
Internet World, published monthly by Mecklermedia in Westport, Conn. began as a newsletter and became a full-color newsstand magazine in September 1993.

Good, Bad, and Ugly Pages
http://www.iw.com/1996/04/bottom.html
This article from *Internet World* 7 (4) April, 1996, by Joel Snyder looks at planning before launching a web site, and errors to avoid.

Serving Government
http://www.iw.com/1996/01/joeuser.html
Andrew L. Jaffee describes the Florida state legislature's process to designits Web site to give residents online access to all state documents. *Internet World* 7 (1) January, 1996.

Universal Design

The Benton Foundation
http://www.benton.org/
The Benton Foundation promotes public interest values and non-commercial services for the National Information Infrastructure through research and policy analysis, outreach to nonprofits and foundations, and print, video, and online publishing.

- **Universal Service and the Information Superhighway**
  http://www.benton.org/Library/Universal/brief1.html
  (briefing paper)
- **The Benton Foundation's Universal Service and Universal Access Virtual Library**
  http://www.benton.org/Policy/Uniserv/
  (extensive listing of publications)

Universal Accessibility—A Matter of Design
http://www.prodworks.com/ua_9606.htm
Copy of presentation materials by Ray Ingram, June, 1996. Copyright © 1996, The Productivity Works, Inc.

Universal Design
http://www2.ncsu.edu/ncsu/design/cud/ud/ud.html
The Center for Universal Design, part of the School of Design at North Carolina State University, is a national research, information, and technical assistance center that evaluates, develops, and promotes accessible and universal design in housing, buildings, and related products.

Accessibility

Accessible Web Page Design
http://www.eskimo.com/~jlubin/disabled/web-desi.htm
Copyright (c) 1994-1996 by Jim Lubin. Links to information on accessible Web page design, testing your Web page for accessibility, graphics, and on-line design discussions; also links to other disABILITY information and resources.

Accessible Web Page Design
http://www.igs.net/~starling/acc/
Copyright © 1997, Starling Access Services. Links to guidelines for making Web page components accessible; links to other resources.
- **General Design Tips**
  http://www.igs.net/~starling/acc/acgen.htm

Adaptive Technology Resource Centre
http://www.utoronto.ca/atrc/
The University of Toronto's ATRC promotes the integration of alternative access systems throughout the information technology infrastructure.
- **Web Access**
  http://www.utoronto.ca/atrc/rd/access/accesssr.html
- **HTML Commandments**
  http://www.utoronto.ca/atrc/rd/html/commandments.html
  Guidelines for writing accessible HTML.

Alliance for Technology Access (ATA)
http://www.ataccess.org/
The ATA is a network of community-based resource centers dedicated to providing information and support services to children and adults with disabilities, and increasing their use of standard, assistive, and information technologies.
- **Designing Access To WWW Pages**
  http://www.ataccess.org/design.html

Center for Applied Special Technology (CAST)
http://www.cast.org/
Founded in 1984, CAST is a not-for-profit organization whose mission is to expand opportunities for individuals with disabilities through innovative computer technology.

Issues of Web Design
http://www.enetdigest.com/design/design.html
Copyright Kathy E. Gill. Created 27 April 1996—
Last Updated 3 November 1996.
Background and procedures on multiple browser compatibility and resource links.

National Center to Improve Practice
http://www.edc.org/FSC/NCIP/
The National Center to Improve Practice in Special Education Through Technology, Media, and Materials (NCIP) promotes the effective use of technology to enhance educational outcomes for students with sensory, cognitive, physical, and social/emotional disabilities.
- **Accessibility of this Site**
  http://www.edc.org/FSC/NCIP/Accessibility.html
  Describes NCIP's design strategies to make their Web site accessible for all users.

NCSA Mosaic Access Page
http://bucky.aa.uic.edu/
Mosaic is one of the first Internet information browsers and World Wide Web clients, developed at the National Center for Supercomputing Applications at the University of Illinois in Urbana—Champaign. This page presents Mosaic's disability access efforts.

WebABLE!
http://www.yuri.org/webable/
Now located at the Yuri Rubinsky Insight Foundation Web site, WebABLE! is a Web directory for disability-related Internet resources.
- **People with Disabilities Can't Access the Web by Mike Paciello**
  http://www.yuri.org/webable/mp-pwdca.html
  (background paper, resource links)

Web Access '97
http://access.www6conf.org/
The theme of the Sixth International World Wide Web Conference, to be held April 7–11, 1997 in Santa Clara, California is accessibility: Everyone-Everything-Connected. Co-hosted by Stanford University and the Stanford Linear Accelerator Center (SLAC)

WWW Consortium
http://www.w3.org/
The World Wide Web Consortium (W3C) was founded in 1994 to develop common standards for the evolution of the World Wide Web.
- **W3C Disabilities Developments**
  http://www.w3.org/pub/WWW/Disabilities/
  (links to many resources)
- **Web Accessibility**
  http://www.w3.org/pub/WWW/Disabilities/Activity.html
  (W3C position statement on disabilities)
- **World Wide Web Journal**
  http://www.ora.com/info/wj/
  (W3J, the quarterly journal of the W3C)

WWW Accessibility to People with Disabilities—A Usability Perspective
http://www.staff.uiuc.edu/~jongund/access-overview.html
An overview of Web accessibility needs by Jon Gunderson of the Mosaic/Web Access Project.
- **WWW Browser Accessibility Recommendations**
  http://www.staff.uiuc.edu/~jongund/access-browsers.html
  Another paper by Jon Gunderson on browser accessibility guidelines.

Hardware/Software Developers

Accessibility Support from Microsoft
http://www.microsoft.com/windows/enable/
How the industry giant works with people with disabilities to make its products more useful.

Disability Connection from Apple Computer
http://www2.apple.com/disability/
The goal of Apple's Worldwide Disability Solutions Group is to change the experience of disability in positive, constructive, and—where appropriate—dramatic ways.

IBM Special Needs Systems
http://www.austin.ibm.com/sns/
IBM technology can open doors for achievement and independence and enhance the employability, education, and quality of life of people who have disabilities.

Government Policies

Center for Information Technology Accommodation
http://www.gsa.gov/coca/
CITA (formerly the Clearinghouse on Computer Accommodation—COCA) is located in the General Services Administration. Links are provided to policies and guidelines.

- **Writing Accessible HTML Documents**
  http://www.gsa.gov/coca/WWWcode.htm
  Guidelines written by Paul Fontaine.

Policy Statement on Making Materials and Information Available and Accessible to Individuals with Disabilities
http://www.ed.gov/pubs/Sec504/append-d.html
This policy clarifies the obligations of the United States Department of Education under Section 504 of the Rehabilitation Act of 1973, as amended, to make its materials accessible and available to its disabled customers.

World Wide Web (WWW) Server Standards and Guidelines
http://www.ed.gov/internal/wwwstds/
This document defines the specific standards and general guidelines which the United States Department of Education (ED) uses to make information available on the WWW.

World Wide Webserver of the City of San Jose
http://www.ipac.net/csj/
The Web site of San Jose, California, was selected as a model City link by the federal CITA.

- **Disability Access Design Standards**
  http://www.ipac.net/csj/oaacc/disacces.html
  Standards are presented and serve as a model for other site developers.

Assessing Web Pages

A Kinder, Gentler HTML Validator
http://ugweb.cs.ualberta.ca/~gerald/validate/
This is a friendly, easy-to-use HTML validation service based on a real SGML parser. It is similar in function to the WebTechs validator, but the returned errors are (hopefully) easier to figure out.

Bobby
http://www.cast.org/bobby/
Bobby is a graphical Web-based program designed by the Center for Applied Special Technology to help web site designers and graphic artists make their web pages accessible by the largest number of people.

Validators and Document Checkers
http://www.htmlhelp.com/links/validators.htm
This list of links to sites that check for HTML syntax errors is maintained by the Web Design Group.

What does your HTML look like in Lynx?
http://www.miranova.com/~steve/Lynx-View.html
Enter the URL of a page at this site and you will see how the page appears to those using the Lynx browser.

Web Page Accessibility Self-Evaluation Test
http://www.psc-cfp.gc.ca/dmd/access/testver1.htm
Developed by the Diversity Management Directorate, Public Service Commission of Canada. You should be able to "score" a Web page's Accessibility Quotient and make the necessary corrections, using this simple self-evaluation test.

WEBTechs HTML Validation Service
http://www.webtechs.com/html-val-svc/
An online validator that checks documents against various levels of HTML.

Browser Software

Browserwatch
http://browserwatch.iworld.com/
Internet World maintains a list of browser software.

Cyberdog
http://www.cyberdog.apple.com/
Apple's browser for the Macintosh.

Can I run Lynx on my OS?
http://www.crl.com/~subir/lynx/platforms.html
A text-based browser, Lynx is one of the early products still in use today.

Microsoft Internet Explorer
http://www.microsoft.com/ie/default.asp
The popularity of Explorer, the browser developed by Microsoft, is growing.

Mosaic
http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/
Mosaic is one of the first Internet information browsers and WWW clients, and it continues to be used and updated.

Netscape Navigator
http://home.netscape.com/
Netscape is currently the most popular browser although it is losing ground to Microsoft's Internet Explorer.

pwWebSpeak Project
http://www.prodworks.com/pwwebspk.htm
pwWebSpeak was designed and developed by The Productivity Works, Inc. in conjunction with De Witt and Associates, who act as accessibility consultants to the project, and Thomas Edison State College. pwWebSpeak is a trademark of The Productivity Works, Inc.

Search Engines

Add an Engine
http://www.iw.com/1996/05/engine.html
Eric Richardson describes how to add a search engine to a site and provides links to a number of free and commercial search engines, *Internet World* (1996, May).

Alta Vista	**http://altavista.digital.com/**
CNET Search.Com	**http://www.search.com/**
Excite	**http://www.excite.com/**
HotBot	**http://www.hotbot.com/**
Infoseek	**http://guide.infoseek.com/**
Lycos	**http://www.lycos.com/**
Magellan (directory)	**http://www.mckinley.com/**
Open Text Index	**http://index.opentext.net/**
Webcrawler	**http://webcrawler.com/**
Yahoo (directory)	**http://www.yahoo.com/**

Search Engine Showdown
http://www.iw.com/1996/05/showdown.html
Gus Venditto's article from *Internet World* tests (1996, May) seven Internet search tools.

Increasing Awareness of Web Sites

Found It On the Net
http://www.iw.com/1996/01/found.html
Linda Engleman's column in the Internet World (1996, January) discusses how to attract visitors to your Web site. Make your presence known; promote without offending.

How <comp.infosystems.www.announce> works (FAQ)
http://boutell.com/%7Egrant/charter.html
The purpose of this moderated newsgroup is to announce events specifically related to the WWW, such as new Web resources and sites.

Promote Assist
http://online-biz.com/promote/assist.shtml
An aid to submitting your Web site to some of the more popular indices, catalogs, spiders and "What's New" lists on the WWW.

Submit It!
http://www.submit-it.com/
A popular free or paid service for sending URLs to search engines and directories.

NIDRR Grantee Resources

This section highlights a sampling of NIDRR grantees with information available on the WWW focusing on aspects of computer communication accessibility.

Access to Disability Data (InfoUse)
http://www.infouse.com/disabilitydata/
InfoUse specializes in the development of health, disability and rehabilitation information using computer technology.

- **Accessibility Issues, Access to Disability Data**
  http://www.infouse.com/disabilitydata/addaccess.html
  InfoUse and other key national sources have developed materials on principles of accessible design, along with some specific guidelines.

RESNA Technical Assistance (TA) Project and Assurance of Quality in Assistive Technology Delivery
http://www.resna.org/resna/hometa1.htm
RESNA Technical Assistance Project activities are aimed at facilitating efforts of the nationwide assistive technology programs to reduce barriers to the acquisition of assistive technology devices and services by individuals with disabilities. The Assurance of Quality Project develops guidelines of measurement and standards to determine the most appropriate technology for an individual user and to evaluate the effectiveness of specific applications of technology.

ADA Technical Assistance Coordinator (ADA-TAC)
http://www.icdi.wvu.edu/tech/ada.htm
This contract addresses the needs of businesses, the disability community, and state and local governments in implementing the ADA by utilizing state-of-the-art electronic communication media as well as traditional media outreach.

Center for Universal Design
http://www2.ncsu.edu/ncsu/design/cud/
The Center for Universal Design, part of the School of Design at North Carolina State University, is a national research, information, and technical assistance center that evaluates, develops, and promotes accessible and universal design in housing, buildings, and related products.

CPB/WGBH National Center for Accessible Media (NCAM)
http://www.boston.com/wgbh/pages/ncam/ncamhome.html
NCAM develops strategies and technologies to make media accessible to millions of Americans, including people with disabilities, minority language users, and those with low literacy skills.

Trace Center, University of Wisconsin
http://trace.wisc.edu/
The Trace Center is an interdisciplinary research, development and resource center on technology and disability. It is part of the Waisman Center and the Department of Industrial Engineering at the University of Wisconsin—Madison.

- **Designing an Accessible World**
  http://trace.wisc.edu/world/world.html
  The Trace Center has developed a number of papers, guidelines, and resources in the broad area of accessibility.
- **HTML Quick Reference Page**
  http://trace.wisc.edu/text/guidelns/htmlgide/htmlgide.pcs/quickref.html
  A quick reference of the ideas you should consider while designing HTML pages to maximize the number of users that can view them. April 1996—Gregg C Vanderheiden Ph.D., Wendy A. Chisholm, Neal Ewers

Transforming Inventions Into Products for Persons with Disabilities
http://cosmos.ot.buffalo.edu/aztech.html
AZtech is operated by the Rehabilitation Engineering Research Center on Technology Evaluation and Transfer (RERC-TET). Three organizations direct the RERC-TET: The Center for Assistive Technology (CAT) at the University at Buffalo, The Independent Living Center (ILC) of Western New York, Inc., and The Western New York Technology Development Center (TDC), Inc.

West Virginia RRTC: Management of Information and Information Systems in State Vocational Rehabilitation Agencies
http://www.icdi.wvu.edu/
WVRRTC activities are seen as a set of challenges to improve rehabilitation services by improving the management of rehabilitation and disability information.

NIDRR Project Results Used by Special Olympics International to Evaluate Impact of Sports Program

Special Olympics International (SOI) has begun an extensive research effort that uses an assessment of adult self-determination developed by The Arc of the United States with funding from the National Institute on Disability and Rehabilitation Research (NIDRR). SOI will examine the impact of integrated recreation on the social competence and self-determination of people with mental retardation.

SOI, founded in 1968 by Eunice Kennedy Shriver, has a mission to provide children and adults with mental retardation with year-round sports training and athletic, Olympic-type sports competition. SOI feels involvement in sports training and competition benefits people with mental retardation physically, mentally, socially and spiritually. In addition, it strengthens families and the community at large, both through participation and observation, by uniting all in better understanding people with mental retardation in an environment of equality, respect and acceptance. The positive effects of Special Olympics have often been the subject of research; the latest example of this is recent research conducted by Yale researchers Dykens and Cohen on the "Effects of Special Olympics International on Social Competence in Persons with Mental Retardation."

SOI recently added a new Department of Policy and Research to its organization with the primary purpose of conducting and funding research to promote the physical and mental health of persons with mental retardation through developing strategies such as community inclusion. Dr. Timothy Baker, SOI's Senior Research Manager and member of the NCDDR Multicultural Research and Dissemination Task Force, recently learned about The Arc's NIDRR-funded Field Initiated Research project, "Promoting Choice and Self-Determination in Adults with Cognitive Disabilities" (CDFA 84.133, PR #H133G50178). The project is being ıcted by The Arc, the nation's largest volunteer organization on mental retardation with more than 1,000 affiliated chapters and 140,000 members nationwide. Since 1990, The Arc has conducted research and developed materials to promote self-determination by youth and adults with mental retardation. These efforts resulted in the publication of "The Arc's Self-Determination Scale," an inventory of self-determination skills and behaviors of students with cognitive disabilities, developed to facilitate student involvement in educational planning related to self-determination and to be used as a research tool in the promotion of this outcome.

The Arc's NIDRR-funded project has developed an adult version of the Scale as part of the project's emphasis on promoting self-determination and increasing the participation of adults with mental retardation in their individual planning meetings. SOI's Baker particularly likes this research instrument "because it focuses on independent adjustment in the community rather than on behaviors to be 'managed,' and because it is designed to be used directly by persons with mental retardation rather than by third-parties such as caregivers."

Working with Dr. Michael Wehmeyer, an Assistant Director in The Arc's Department of Research and Program Services, and Principal Investigator of the NIDRR research project, SOI will conduct research using The Arc's Self-Determination Scale to evaluate the impact of participation in integrated recreation activities on social competence and individual self-determination. This research will provide an opportunity to further evaluate and expand the Scale's utility for adolescents and adults. SOI is currently translating the Scale into the Russian, Czech, Arabic and Spanish languages in order to conduct research in seven countries. Further work may also be on the horizon as The Arc and SOI discuss the viability of creating a version of the Scale for elementary-age students.

References

Dykens, E. M. & Cohen, D. (1996, February). Effects of Special Olympics International on social competence in persons with mental retardation. *Journal of the American Academy of Child and Adolescent Psychiatry* 35(2), 223–229.

How To Contact The National Center For The Dissemination Of Disability Research

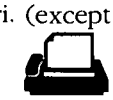
Call Us
1-800-266-1832 or 512-476-6861 V/TT
8 A.M.–NOON and 1 P.M.–5 P.M. C.T.
Mon.–Fri. (except holidays)
or record a message 24 hr./day

Explore Our Web Site
http://www.ncddr.org/

E-mail Us
jwestbro@sedl.org

Write Us
National Center for the
Dissemination of Disability Research
Southwest Educational
Development Laboratory
211 East Seventh Street, Suite 400
Austin, Texas 78701-3281

Visit Us
In downtown Austin, Texas
4th floor, Southwest Tower,
Brazos at 7th St.
8 A.M.–NOON and 1 P.M.–5 P.M. C.T.
Mon.–Fri. (except holidays)



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THE

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***The Research Exchange* is available in alternate formats upon request.**

At a Glance

A WORD FROM THE DIRECTOR

You Can Evaluate Your Dissemination Efforts

A good project design should address the way in which the dissemination activities of your project will be evaluated. Evaluation is an important aspect of dissemination planning and implementation. Dissemination planning promotes your ability to describe the impact and/or the changes that may have occurred through the use of your project's results. Many times, unfortunately, grantees do not conduct dissemination evaluation activities, feeling they are too costly or take too much staff time. Not conducting evaluation of your dissemination, however, means that

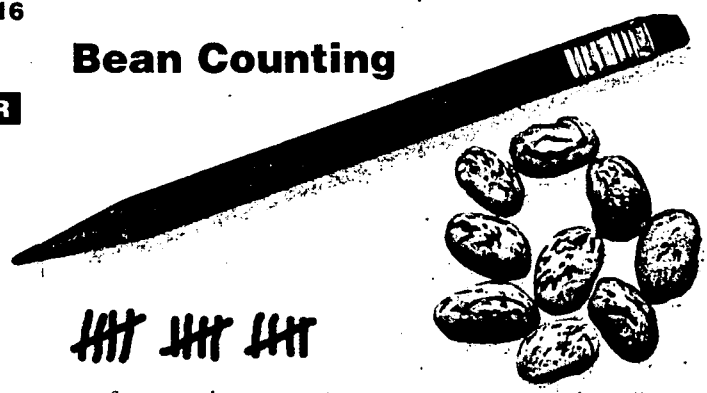
continued on page 2

Dissemination Evaluation Strategies and Options

The evaluation of your NIDRR grant's dissemination activities can help you in:

- establishing credibility of your project's unique approaches and outcomes,
- demonstrating the effectiveness of your project's strategies, and
- learning more about what does and does not work, as well as allowing your efforts to be continually refined.

Bean Counting



Unfortunately, many times grant projects only collect "tracking" information. Sometimes this type of data collection is referred to as **"bean counting."** Examples of this type of tracking data include such things as:

- number of telephone contacts received per day;
- time of telephone contacts made per day;
- telephone caller descriptive information;
- number of items sent out by U.S. Mail or electronic mail;
- number of items received by U.S. Mail, electronic mail, or fax;
- number of products ordered or purchased;
- how those making contact learned about your project; and
- how much time was spent in responding to each contact.

continued on page 2

You Can Evaluate Your Dissemination Efforts

continued from page 1

you will not know or be able to report with confidence your success in this important area. Many times grantees state that "informally" they know their project is successful or that the intended audience(s) received and regaled the project's disseminated information. Such informal assessment lacks the power to assist you in deciding how you can improve your good success and it lacks credibility with many listeners since most grantees say it!

It is possible for you to do dissemination evaluation that is not overly burdensome. In fact, evaluation of your dissemination activities can help you answer the question that is frequently asked of a growing number of publicly-funded projects: *What difference have you made?* In a very significant way, your project's ability to answer this question rests in its ability to present information that shows beneficial impact within your identified target audience(s). Because dissemination is the process by which you facilitate use of your shared information, any measurable impact on users significantly reflects on the effectiveness of your dissemination strategies.

This issue of *The Research Exchange* provides information on assessment techniques that can help in collecting dissemination-related evaluation data. In addition, this issue comes along with a recent NCDDR publication, *Dissemination Self-Inventory*. This newsletter and the accompanying material, hopefully, provide information you can use in structuring and implementing an effective dissemination evaluation strategy.

John D. Westbrook
Director

Dissemination Evaluation Strategies and Options

continued from page 1

Such tracking data are limited in their ability to assist in describing the level of impact your dissemination efforts have had. These data can be very useful, however, in establishing the level of interaction your project staff members are having with your target audience(s). Very few contacts coming in or going out can reflect the basis of a potential dissemination limitation. Extensive contacts in and out may indicate an active information-sharing exchange that tends to support information dissemination.

Tracking information is typically collected through the use of forms. These forms can be paper or electronic. The development and use of electronic forms can be very beneficial in promoting easier aggregation of data.

Developing an Effective Evaluation Form

Many times forms are used to collect information relevant to evaluation questions. Forms can be used to collect information from project staff, user groups, or the general public. There are a few things to consider when developing such forms that can make their intended result more predictable. Briefly, these include:

1. Tailor your form to the specific data measures that are appropriate.
2. Design your form for specific data sources, recognizing a need for special adaptation or alternatives in format such as audio or Braille versions and the possible need for non-English versions.
3. Consolidate items as much as possible.
4. Pre-test (and/or field test) your form with a sample of your target audience prior to full implementation. Make changes that seem warranted, and consider the benefit of a second field test.
5. Configure your form and possible responses in such a way that allows results to be easily entered into a computer database, aggregated and compared.

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Director	*Information Services Technician*	*Research Associate*	*Graphic Design*

Dissemination-Related Evaluation

There are four main types of evaluation activities that seem to be of general use in measuring dissemination-related grantee efforts. A brief description of these follows.

- **Formative Evaluation**—occurs during the design period of materials development or activity implementation. These types of evaluation data address the effectiveness and usefulness of approaches. It is applied to materials or activities before they are considered to be "completed." Formative evaluation data can help re-direct or refine activity strategies and/or material development efforts. The data source for formative evaluation efforts is frequently an appropriate sub-sample of the intended user audience that is not involved in the project's development activity. To be most effective, formative evaluation requires clear alternatives with "potential users" commenting on what works best.
- **Impact Evaluation**—is intended to provide information concerning the long-term result or impact of a project or activity. This type of evaluation measures actual changes—for example, the number of spinal cord injuries in an annual period—rather than more subtle attitude or behavior changes that may or may not be linked to cause and effect relationships with results. Depending upon the nature of the result, impact evaluation can be complex. It is often avoided because of the frequent difficulty in many human-intensive, time-limited efforts to separate the effects of project activities from the effects of "outside" variables in producing measured impact.
- **Outcome Evaluation**—is designed to measure the effects of project activities upon identified target audiences. Outcomes can be measured in terms of changes/increases in awareness, shifts in attitudes, changes in behaviors, and increases in knowledge, among others. Outcome evaluation is helpful in identifying and measuring how your project activities affected various segments of your audience. This type of measurement usually establishes baseline data before project activities are initiated, and then periodically assesses for changes over time in these same data areas.
- **Process Evaluation**—usually takes place during the time new activities are being implemented. Process evaluation is designed to help in determining changes in the efficiency and effectiveness of the implementation process. This type of evaluation analyzes the extent to which planned activities occur, their timeliness, their cost, and the extent to which they reach intended audiences.

Plan to Evaluate

All too frequently, proposals do not include information about specific dissemination goals, goal-related dissemination activities, dissemination budget, clearly defined dissemination target audiences, or dissemination-related evaluation activities. Without this framework, dissemination efforts become nothing more than distribution plans. Evaluation of a project's dissemination process and outcomes is not possible unless goals, strategies, and expected outcomes have been conceptualized.

Despite the lack of proposal plans regarding dissemination, it is possible to devise an effective dissemination plan as soon as funding decisions are made and initial implementation is occurring. In addition, it is also frequently possible in ongoing projects to make adjustments so that the impact of dissemination is more clearly understood.

As stated previously, your project's ability to clearly identify and demonstrate its effect on people (other researchers, journalists, consumers, consumers' family members, or others) will increase the credibility and perceptions of effectiveness about the strategies, interventions, and/or materials that you have used or developed.

It is important to be able to answer as many of the following dissemination-related evaluation questions as possible:

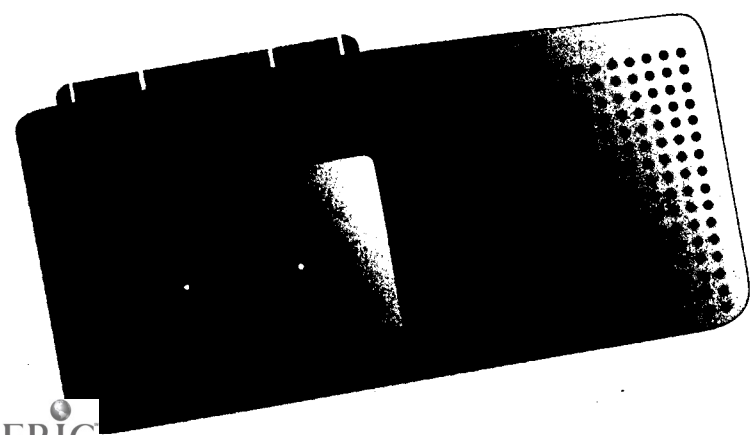
- Were the project's materials delivered in the quantities and in the formats desired by the target audience?
- Do members of your target audience report using your materials or information?
- Did your project receive and respond to requests from the target audience in a timely manner?
- How much did the dissemination efforts cost and was that adequate to achieve the planned-for outcome?
- Which of several options or alternatives is most effective in meeting the expressed needs of specific target audiences?
- Did the project make a difference and, if so, what are the dimensions of that difference?
- What changes in knowledge, attitude, behavior, or condition have occurred in the target audience(s) as a result of project activity?
- To what extent has each objective of the project's dissemination plan been accomplished?

While this list is by no means comprehensive, it does indicate areas in which evaluation of your project's efforts should be considered.

Using Focus Groups in Evaluation

Focus groups can be extremely helpful in gaining perspectives from your target audience. Basic tips on planning and implementing focus groups include:

1. Carefully select 8 to 10 individuals that reflect the characteristics of your designated target audiences and have not been involved in your project's planning or implementation efforts. If your audiences are very diverse you may need multiple focus groups.
2. Carefully detail the information you wish to learn from the focus group members.
3. Do not tell potential focus group members about the topic or the identity of other group members in advance of the meeting. Tell contacts if you are paying a nominal fee for their participation in the focus group.
4. To increase the validity of your focus group results, conduct multiple focus groups aimed at the same information collection.
5. Present material or other information in the same way to each focus group.
6. Consider recording the audio and/or video portions of the group discussion.



Planning Details

Your evaluation planning should involve identifying specific evaluation questions to answer. After this has been done, however, you will need to clarify several other "pieces" of the evaluation activity that must be considered. These details of the evaluation planning process apply to each evaluation question you plan to answer. These include such things as:

- **data sources**—identify as clearly and precisely as possible where the information relevant to answering the evaluation question is located.
- **data measures**—specify the items (data) that will be collected in the evaluation effort to answer the evaluation questions.
- **timing of data collection**—determine if some items may require weekly or monthly collection while others may be collected initially and annually thereafter.
- **use of the information**—consider how the answers to each of the evaluation questions will be used by project staff, funding agency staff, persons in the community, or others.
- **reporting timeliness**—usually, the results of dissemination-related evaluation efforts are reported. It is helpful to establish the extent and the frequency of such reporting in advance.

Collecting Dissemination-Related Evaluation Data

There are many alternatives in both what and how evaluation activities will be focused. Data collection strategies will be influenced by the type of evaluation you are attempting to conduct. Many of your dissemination-related evaluation efforts will necessarily involve sampling your designated target audience(s).

Examples of strategies for collecting evaluation data should be individually considered for each evaluation question. Some alternatives may be more time-consuming, costly, difficult, or desirable than others. Tailor your collection strategies to that which you can do. Examples of such collection activities that you might consider include:

- Follow-up telephone calls,
- Project tracking records of materials distribution,
- User-completed feedback cards included within materials,
- Survey of segments of your designated target audience(s),
- Focus groups,
- Project tracking of requests for materials or services from the designated target audience (including format, as appropriate),
- Audit of materials and associated alternate formats developed by the project,
- Project tracking of budget expenditures in dissemination activities,
- User-related data collected as a part of field test or pilot test procedures,
- Newspaper clippings or other popular press documentation of target audience changes, and
- Number of "hits" or contacts made to your project's World Wide Web site.

Field Testing Your Materials

NIDRR grantees that have produced informational materials for others should use some form of field testing to determine how the materials meet the needs of the intended user/target groups. Data from field testing can be collected in a variety of ways such as those highlighted in the previous section, *Collecting Dissemination-Related Evaluation Data.* You should outline questions that you want answered as a function of the field test activity. Questions should be specific enough to provide information you can use to make modifications to the materials.

Your field testing should also capture information about the medium you have selected to communicate. Provide the information in several formats—for example, print, electronic disk, and World Wide Web page. Have your field test participants comment on which format they used to receive the information and what they thought about the functional capacity of the other formats. All formats are not equal in their power to communicate. You should be aware of the difference these formats can make with your intended user groups.

This is also important if you are doing outreach to new user groups or you are using general media to create a broad-based awareness of the availability of your information. Awareness of your project as an informational source and awareness of specific information topics that can be shared through contacting your project, can be considered for wider public campaigns. If this is a part of your dissemination plan, it should be subject to field testing and further evaluation after it is conducted.

Sharing Your Evaluation Results

It is important to document your evaluation efforts and results. Many times this is done in the form of a report. Such reporting provides an opportunity to disclose not only your dissemination planning, methods, and evaluation results, but also what the project did with the information. Any ways in which evaluation data were helpful in making modifications enhancing effectiveness, or utility of your results should be reported.

Consider the following as points to include in reporting your dissemination activity evaluation effort:

- Describe both the strengths and the weaknesses that you discovered through the evaluation;
- Identify any specific outcomes that were a result of your project activities;
- Recommend changes or modifications, or further data collection that may be appropriate;
- Address the extent to which funding and staff time commitment affected the activities and/or results of the project;
- Identify specific ways in which your designated target audience was impacted by your project's dissemination efforts;
- Identify the extent to which your projects' dissemination results varied according to the variables of: user group, content, context, medium, and information source; and
- Describe any "next steps" that seem to be appropriate, based upon your evaluation.

Summary

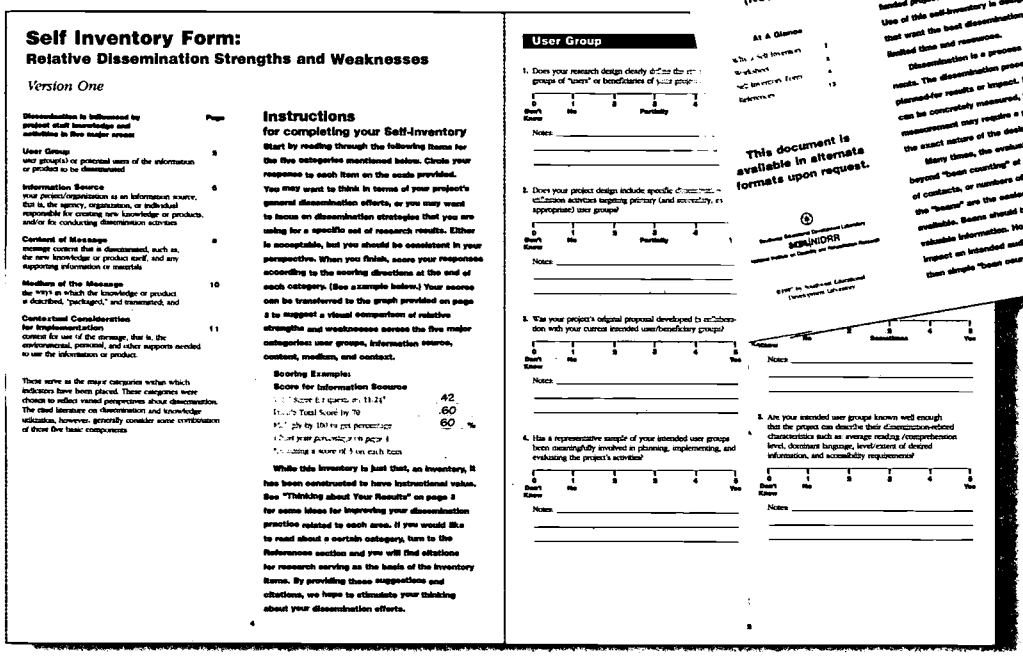
The evaluation of your dissemination activities and outcomes is an important part of your NIDRR project effort. It is through such evaluation that you and NIDRR management can learn more about the best strategies to accomplish specific outcomes. The process of dissemination is so varied and complex that evaluation on an ongoing basis is needed to help in determining the level and nature of your progress in achieving outreach to various potential user groups. Without good evaluation of your dissemination efforts, you will never really know the extent of your impact.

Each grantee must be prepared to respond to the often-asked question,

What difference did your project make?

New NCDDR Product

Dissemination Self-Inventory



The NCDDR has produced a new resource for NIDRR grantees that are interested in assessing dissemination activities and identifying a starting point in improving overall dissemination strategies. The current inventory represents the first in a series of three. The first self-inventory is based on the scholarly literature concerning dissemination, knowledge utilization, and the change process. The second version of this self-inventory (scheduled for completion in 1998) will include best practice examples taken from business and industry public relations and marketing efforts. The third version of this self-inventory will combine the two previous areas with best practices taken from public relations and marketing firms specializing in outreach to minority Americans. The combination of these three major dissemination tracks in one instrument should create a helpful tool for NIDRR grantees.

The NCDDR staff believe that no matter how good a dissemination effort may be, it can always be improved. This is the spirit with which the self-inventory was developed. It is designed to provide assistance in analyzing relative strengths and weaknesses of current, actual dissemination efforts.

As a self-inventory, the instrument can be used by the Principal Investigator alone or by all staff working on a project. This flexibility adds to the potential power of the inventory in identifying clear areas in which actions may be appropriate and beneficially undertaken. The self-inventory is designed to allow the respondent to chart results and as a consequence, identify the relative strengths and weaknesses of your project's efforts in dissemination.

The 54-item self-inventory uses the areas shown to be critically linked to the effectiveness of dissemination activities. The major categories of dissemination-related inventory items are:

- **User group (or target audience)**—actual and potential users of the information that is disseminated;
- **Information source**—the developer and disseminator of the information;
- **Content of message**—new information along with any supporting information or resources;
- **Medium of the message**—the ways in which the information is described, "packaged," and transmitted; and
- **Contextual consideration for implementation**—the environmental, personal, financial, and other supports needed to use the information.

References and other resources to assist grantees in addressing or understanding categories of the self-inventory are included. A total of 78 citations are included in the references section of the self-inventory. These are divided into the major categories identified above and, in addition, a general references section is included.

A copy of the NCDDR Dissemination Self-Inventory is included with this issue of *The Research Exchange*. Alternate formats and additional copies may be requested from the NCDDR.

Learning from Business and Industry

Thinking about Your WWW Site: Can It be Evaluated?

A survey of 1,000 commercial World Wide Web (WWW) sites was conducted by the University of Illinois at Chicago in May 1996. The survey attempted to categorize how the commercial sites were classified. Basic categories describing sites were:

- **promotion** of products or services,
- **provision** of data and information; and/or
- **processing** of business transactions.

These functional categories of sites were further described in terms of the "values" reflected in the creation of the site. These included such things as:

- **timeliness** within the context of a special sale, special offers, or product announcements;
- **customization** of database to items of interest;
- **logistics** including price lists, online catalogs, and online access (ordering system); and
- **sensational** purposes such as contests, sweepstakes, or giveaways.

The study conducted by James K. Ho revealed several interesting findings about how business is now using the WWW technology:

- To users, most of the sites are considered to be in the **promotion** category. Most of the strategies taken are traditional—in the logistics area—using product news, catalogs, and portfolios as the basic approach.
- The major difference, however, with the WWW marketing approach and that used in the mass media is that the user has better control over what he or she views.
- Commercial sites are using **provision** functions of sites much less than the **promotion** functions. Surprisingly, use of the WWW in **processing** business transactions is largely undeveloped.
- Approximately 95 percent of the 1,000 commercial sites studied included elements of **logistical promotion**. This is the most frequent use of commercial sites.

While this type of evaluation seems perhaps simplistic, Trochim (1996) has pointed out:

> It is surprising given the importance of this technology and the resources that are being committed to implementing it [the World Wide Web], that there has been so little effort to date to evaluate it. There is a remarkable absence of studies that examine how websites are conceptualized, developed, and implemented, or that look at the effects of their use. In the haste to construct the World Wide Web we have simply not had the time to evaluate and reflect on how this technology is being accomplished and the effects it is having on the way we live, perform in our jobs, and interact with our environment.

Many challenges exist in trying to describe why websites are developed and in trying to determine if usage of the website is producing measurable and intended results. Generally, there is agreement that websites are developed to address one or more of the following:

- information dissemination,
- education and training,
- commerce and advertising,
- entertainment, and/or
- communications.

Specific ways in which websites can be evaluated for effectiveness depend on the: original design or concept for the site; the way in which the site's content information was developed; the manner through which the site was implemented using text, graphics, and other components; and the extent to which a site is appraised for effectiveness by its users.

Fitzelle and Trochim (1996) have studied factors related to university student's perceptions of useful, helpful websites. Characteristics identified by these users include such things as:

- the extent to which the site improves generic computing skills through the incorporation of such things as useful, related links to other websites; and involvement of users in contributing to a knowledge base.
- whether or not the website is updated regularly and is accessible (considered to be responsive to user's needs);
- the perception of information included on the website as being comprehensive;
- the ability of the website to link users with "experts" in the topical area(s) addressed by the website; and
- the extent to which the website is adaptable to different learning styles of the users.

NIDRR grantees should be aware of the different ways in which the utility of websites can be described and evaluated. Over half of all NIDRR grantees now maintain a website. All grantees should incorporate evaluation of their website activities and its impact in their overall dissemination evaluation.

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Fitzelle, G. & Trochim, W.K. (1996) *Survey evaluation of web site instructional technology: Does it increase student learning?* [Online]. Available: http://trochim.human.cornell.edu/webeval/webeval.htm

Trochim, W.K. (1996). *Evaluating websites* [Online]. Available: http://trochim.human.cornell.edu/webeval/webeval.htm

NIDRR Grantees Receive Recognition

The NCDDR would like to congratulate each of the following grantees for the recognition of their efforts. For each item, we have identified the NIDRR-funded project name; the award, citation, or recognition; and the name of the Principal Investigator or contact for further information, with telephone number and e-mail addresses. *All NIDRR grantees are encouraged to contact the NCDDR with information to share in future issues of The Research Exchange.*

Michelle Averbuch and **Jim Hibler**, Physical Therapists with the **RRTC on Enhancing Quality of Life of Stroke Survivors** of the Rehabilitation Institute Research Corporation/Rehabilitation Institute of Chicago were recently honored. They won the *Sarah Basquin Award* in June, 1996, in the Allied Health Group area of a Northwest University medical competition. Mr. and Mrs. Sol Rosen, parents of Sarah Basquin, a former patient at the center, donated the funds for the award in her memory. The winning paper, "Effects of Aerobic Conditioning on Young Persons Post-Stroke," is being published. Please contact Linda Lovell, Project Coordinator, at **312-908-6197** for additional information.

~

Dr. Laura Blankertz, Director of Research of the **RRTC on Vocational Rehabilitation and Mental Illness,** University of Pennsylvania, received the *Armin Loeb Award* in June, 1996. The award, named after an early psychosocial researcher, is given annually by the International Association of Psychosocial Rehabilitation Services to a researcher who has made outstanding contributions to the field and to the development of its research capacity. Dr. Blankertz has been instrumental in developing a set of outcome measures, the *Toolkit for Measuring Psychosocial Rehabilitation Outcomes,* that can be used by all psychosocial providers to report on program effectiveness and to structure research efforts. For information about the availability of the *Toolkit,* contact the IAPRS at **410-730-7190.** Dr. Blankertz can be reached at **215-438-8200.**

~

Dr. Diana D. Cardenas, Project Director of the **Northwest Regional Spinal Cord Injury System,** University of Washington, has been appointed to a three-year term on the National Institute of Child Health and Human Development (NICHD) Initial Review Group's new *Medical Rehabilitation Research Subcommittee.* The committee will advise the directors of the National Institutes of Health and the NICHD on rehabilitation-related research, and will review applications for awards and grants relating to research and research training in rehabilitation medicine. Dr. Cardenas also received the *New Jersey Medical School's 1996 National Teaching Award in Physical Medicine and Rehabilitation,* and was named to the Institute of Medicine's *Committee on Assessing Rehabilitation Science and Engineering,* which advises the Federal government on public health policy matters. For more information contact Dr. Cardenas at **206-543-8171** or **e-mail: dianamac@u.washington.edu**

~

Dr. Catherine A. Marshall, Director of Research for the **American Indian Rehabilitation Research and Training Center** (AIRRTC) at Northern Arizona University, has been selected for a Fulbright Scholar award beginning in January 1997. Administered by the U. S. Information Agency, the principal purpose of the Fulbright program is to increase mutual understanding between the people of the United States and the people of other countries through educational and cultural exchanges. Dr. Marshall will continue her work in Oaxaca, Mexico which has been sponsored for three years by the U. S. Department of Education as supplemental funding to the AIRRTC. Over a nine month period, she will research the effectiveness of consumer participation in conducting community-based rehabilitation research and will teach an interdisciplinary graduate course on world views of disability. For further information, contact the AIRRTC (Project Director, Dr. Priscilla Sanderson) at **520-523-4791.** Dr. Marshall's e-mail through September, 1997: **marshall@antequera.com**

How To Contact The National Center For The Dissemination Of Disability Research

Call Us
1-800-266-1832 or 512-476-6861 V/TT
8 A.M.–NOON and 1 P.M.–5 P.M. C.T.
Mon.–Fri. (except holidays)
or record a message 24 hr./day

Explore Our Web Site
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Research Exchange

VOLUME 2, NUMBER 3 1997

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At a Glance

A WORD FROM THE DIRECTOR

Gateways to NIDRR's Disability Research

When the National Center for the Dissemination of Disability Research (NCDDR) began its work in the summer of 1995, approximately twenty percent of NIDRR's grantees had World Wide Web (WWW) sites. Today, in the summer of 1997, over half of all NIDRR grantees have active WWW sites. Approximately 20 percent (25 out of 130 grantees) of the remaining grantees indicate that they have plans to establish a WWW site in the next 12-month period.

First of all, one has to be struck with the rate of growth of WWW sites among NIDRR grantees. With the majority of grantees "up" on the WWW, a new set of opportunities for the dissemination of

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Model Spinal Cord Injury System WWW Gateway

NIDRR currently funds eighteen projects that constitute its Model Spinal Cord Injury Model System (MSCIS) Program. MSCIS project directors meet twice a year to discuss their individual and overall progress and challenges. The NCDDR director was invited to discuss the subject of dissemination with this group at its December 1996 meeting. MSCIS projects have organized themselves around committees that address specific types of issues. The MSCIS Dissemination Committee addresses ways in which spinal cord injury information and related data can be usefully made available to those who can use it. Discussions between the NCDDR and the Dissemination Committee began an effort to build a gateway on the WWW that would display the nature and scope of NIDRR's MSCIS and also would begin to establish a common outlet that could be used by MSCIS projects to disseminate information they felt was relevant.

Working cooperatively with the MSCIS Dissemination Committee, initial "drafts" of the informational components were developed. These were categorized into three phases for development purposes.

Phase One:

MSCIS Program Information

- History of NIDRR's MSCIS Research Program
- MSCIS Project National Electronic Map
- MSCIS Program Search Engine
- WWW Links to MSCIS Projects Online
- Special MSCIS Information Resources (Such as the Intervention Database, Bibliography, and the National Spinal Cord Injury Statistics Center)
- Information about NIDRR

Phase Two:

MSCIS Project Resources and Services

- MSCIS Project News
- Highlights of MSCIS Project Findings
- Commentary from People Involved/Treated by an MSCIS Project
- Commentary from the Leadership of the MSCIS Program Association
- Text and Graphic Illustrations Representing Consumer Information (such as Skin Care, Bowel Management, etc.)

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disability research information present themselves. Second, the rate of growth is phenomenal when considering that, for the most part, this growth has been at the option of the grantee. In other words, few NIDRR funding priorities have required the applicant to develop a WWW site. Rather, it is the case that applicants have viewed a presence on the WWW to have its own benefits and it has often become an applicant's option in developing a more competitive proposal. It is also the case that many current NIDRR grantees have developed WWW sites without mention of such sites in their original proposal.

The proliferation of the WWW and grantees' sites on the WWW brings challenges in effectively organizing NIDRR-funded disability research information. The NCDDR—with its mandate to increase dissemination of NIDRR grantee research results—is in the process of developing NIDRR Disability Research Topics Gateways. While the pioneering efforts of this work are using the WWW as the primary medium, the accumulated disability research information will be made available in multiple formats and will be sorted for use in many different ways. This issue of *The Research Exchange* highlights the work to date of the NCDDR on these gateways. It is my hope that as these gateways take shape, individual NIDRR grantees will see how pieces of their work/results can fit into the larger informational system and will bring it forward to the NCDDR staff for inclusion.

Our common challenge into the future is to make NIDRR's disability research information as accessible and available as possible. In this new age of the WWW, it does not matter where the electronic information may be "housed." What does matter is whether a potential user will have to diligently investigate and try many non-useful alternatives before arriving at the information needed. The NCDDR does not intend to duplicate what any other NIDRR grantee has established via their website. The NCDDR does hope to centralize NIDRR's disability research information in a new way that is helpful and useful to consumer and researcher alike.

John D. Westbrook, Ph.D.
Director

Model Spinal Cord Injury System WWW Gateway

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Phase Three:

MSCIS Information About Spinal Cord Injury

- Spinal Cord 3-D Imaging
- Spinal Cord Injury Fact Sheets
- Excerpts from Relevant Spinal Cord Injury Training/Information Video Productions

At the Summer 1997 meeting of the MSCIS, the full membership was oriented to the current status of the gateway. Most parts associated with phases one and two have been initiated. The orientation provided an opportunity to show this type of gateway system as a way in which MSCIS projects can show their unique contributions to the accepted treatment and management of spinal cord injury. The Chair of the Dissemination Committee is Bruce Becker, M.D., Principal Investigator of the Model Spinal Cord Injury System at the Rehabilitation Institute of Michigan. Dr. Becker made these comments about the effort to date:

> "We are excited about the opportunities that the web gateway offers to the members of the model systems in communication. More importantly, the site offers an opportunity for the external world to understand the ongoing efforts of the model systems to improve health care for spinal injured patients, to access information arising from within each of the model systems research and educational programs, and to provide input to help shape the systems of the future."

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John Westbrook	Lin Harris	Joann Starks	Jane Thurmond
Director	*Information Services Technician*	*Research Associate*	*Graphic Design*

A member of the Dissemination Committee, Lesley M. Hudson, M.A., Co-Project Director of the Georgia Regional Spinal Cord Injury Care System, has this to say about the new gateway:

> "In spite of the fact that the model system program is over 25 years old, it has always remained current by embracing emerging technology that enhances its function. With the www opportunity, the 18 currently funded systems can truly work as one system nationwide. Information can be shared very quickly, dialogue will be facilitated, and feedback can be instantaneous. This should encourage an acceleration of the work of the model system and increase its efficiency. External to the system itself, the www provides a new and exciting opportunity to disseminate information gathered over nearly three decades. The possibilities are virtually endless!!!"

The NCDDR's Project Officer, Ellen Blasiotti, states the following about this example of gateway development:

> "It is a great pleasure to see the information 'gateway' concept take shape with the MSCIS. Hopefully, this is only the beginning of a series of information activities that will significantly enrich NIDRR's dissemination efforts. Through the exceptional work of the NCDDR and the Model Spinal Cord Injury System projects, a dynamic collaboration has taken place, which is increasing the flow of information about research, not only among SCI colleagues, but within the larger rehabilitation and research communities, and with the public.
>
> The 'gateway' concept is a 'win-win-win' proposition. First, it is a powerful tool to use in presenting the topics of rehabilitation research to the public in a new way. With its various levels of information and its links to many resources, the 'gateway' can practically become a self-guided tour of as little or as much information as the consumer desires. Second, for researchers, it provides a place to showcase the results of research in an untraditional venue and with richer description. Lastly, the 'gateway' allows NIDRR to combine the results of individual projects to show the world a 'patchwork quilt' of information that, organized and presented over time, will make evident the patterns of the NIDRR research investment as a whole."

The MSCIS Gateway has recently been activated and you can access it via the WWW at the following URL:

http://www.ncddr.org/mscis/

This site continues to grow and develop through the participation of MSCIS project staff. All members of the MSCIS will be oriented to the website this summer and will begin to suggest additions to the gateway, through the leadership of the Dissemination Committee.

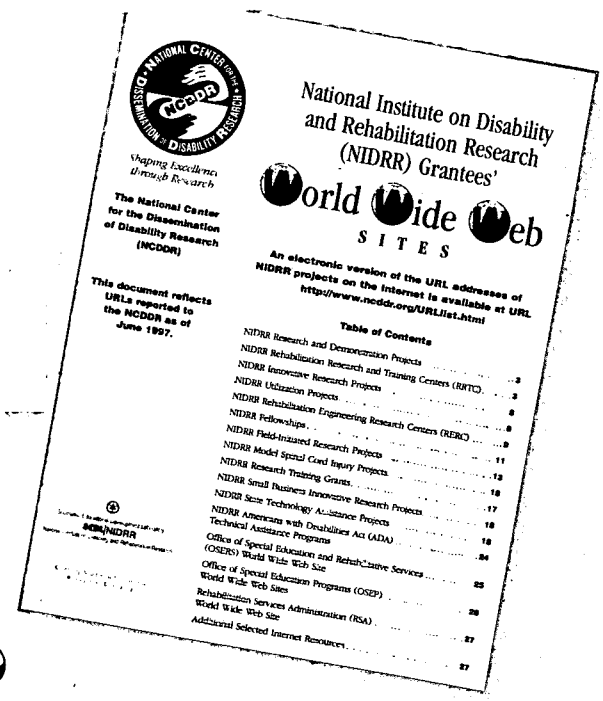
NIDRR's Online Grantees URL Directory

This issue of *The Research Exchange* comes to you with a directory of addresses of websites being maintained by NIDRR grantees. This directory will be updated annually by the NCDDR due to the fact that this information rapidly becomes outdated.

The NCDDR staff hope that this booklet is useful to you in highlighting sites that you may not have known were available. If you, as a NIDRR grantee, develop a WWW site, please let us know and we will add your site to this directory.

The directory is divided into the major funding programs of NIDRR. Each entry provides:

- the WWW URL for the site,
- the NIDRR grant name,
- the grantee organization name, and
- the grantee organization's address.


National Institute on Disability and Rehabilitation Research (NIDRR) Grantees' World Wide Web SITES

The National Center for the Dissemination of Disability Research (NCDDR)

This document reflects URLs reported to the NCDDR as of June 1997.

An electronic version of the URL addresses of NIDRR projects on the Internet is available at URL http://www.ncddr.org/URLlist.html

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National Association of Rehabilitation Research and Training Centers Plan WWW Gateway

NCDDR staff were invited to make a staff development presentation at the recent meeting of the National Association of Rehabilitation Research and Training Centers (NARRTC). This presentation focused on principles of effective dissemination, patterns of past dissemination, and resources available to grantees to assist in development and implementation of their dissemination plans.

The NARRTC has indicated a desire to work with the NCDDR to create a gateway on the WWW that will focus on their unique membership and accomplishments. Development of these gateways will include components discussed earlier for the MSCIS but will also include features such as:

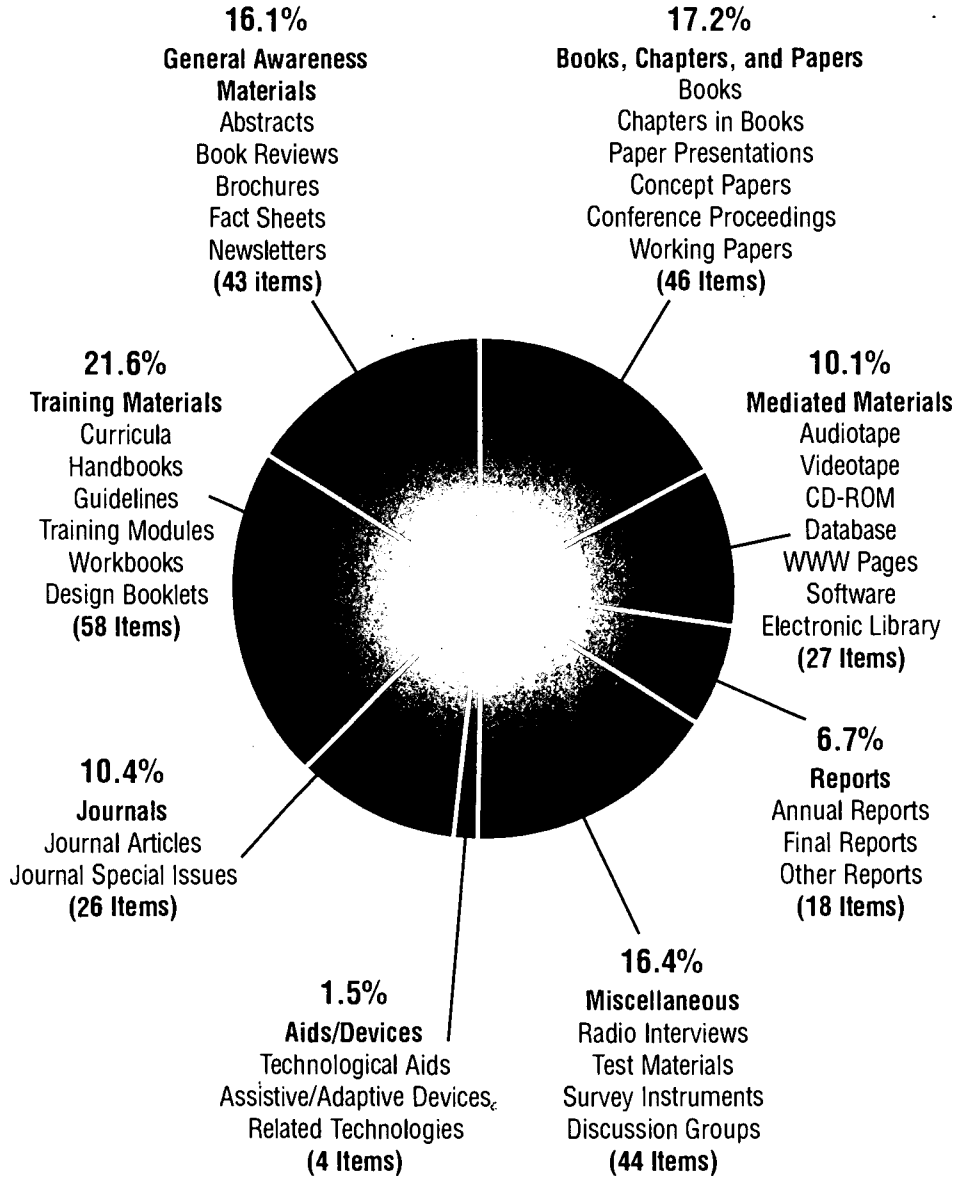
- enhancement of the current project descriptions/abstracts to improve the ability of the NCDDR search engine to distinguish between projects and facilitate more appropriate sorting within the search process
- participation in the development of a typology of "outcomes" that may represent the scope of results/accomplishments that are realized through the NIDRR-funded program as a whole
- investigation of the extent to which experimental designs and "tentative" conclusions can be advantageously shared with consumers, family members of consumers, or other researchers

Progress in this development effort will be reported in future issues. Individuals wishing to comment on the development of this and other gateways are encouraged to contact the NCDDR staff.

NIDRR Disability Research Gateways

In the Summer of 1996, the NCDDR solicited from all grantees nominations of results of their NIDRR grant work that were considered to be in need of further dissemination. In response to this request the NCDDR received a total of 266 nominations.

The results nominated by grantees represented a wide variety of product types:



The majority of results nominated had not been formally reviewed/evaluated by users. The primary request for assistance described by the nominators was for development of a press release, with no particular outlet for the press release specified. This may have been due to the use of a press release as an example in the solicitaiton materials.

It became clear to NCDDR staff that the production of such press releases would not have the desired effect described by many grantees. For example, some grantees had specific populations of people that they felt would benefit from the information, others specified associations or organizations that were perceived to have interest/use for the result. In most cases, however, grantees had not identified definable populations who would receive benefit from the result. These and other factors caused the NCDDR staff to consider ways in which NIDRR-funded "splintered information" could be aggregated into more of a whole. And, the NCDDR staff was concerned with ways in which disability research information developed through NIDRR funding could be more visible to wider groups of audiences that may be able to use the information.

These considerations prompted the NCDDR to develop the concept of NIDRR Disability Research Topics Gateways. These gateways will serve as a centralized point from which a person can search and locate grantees and/or grantee results that are related to their informational need. The system is organized around three "levels" of information. Conceptually these levels are demonstrated in the graphic Disability Information Gateways. The informational gateway system is designed around three vertically and horizontally linked components. Briefly described these are:

NIDRR Disability Research Topics Gateways

LEVEL 1	LEVEL 2	LEVEL 3
General Information	**NIDRR Research Results**	**Related Information for Your Use**
User-friendly consumer-oriented statement/synthesis of major research findings or knowledge	Information developed by NIDRR Grantee that supports the synthesis statement	Related research supporting finding
		Data sets produced by Grantee
	LINK	Tables and other data
	Information developed by NIDRR Grantee that supports the synthesis statement	Illustrations/graphics of effects
		Audio/visual representations
	LINK	3-D images
	Information developed by NIDRR Grantee that supports the synthesis statement	Consumer Case Study/Feedback

This section provides a summary or synthesis of NIDRR research in a particular area. It is intended to be free of jargon and user-friendly.

This section will provide information developed by one or more NIDRR grantees. This section provides more information related to the previous General Information.

This section can provide a variety of information that relates to the NIDRR Research Results. For example, the section could include related research (not NIDRR-funded) or databases of NIDRR grantee's raw data, tables or other graphic representations of grantee's results; audio-visual "snippets" to reinforce/expand understanding; 3-D imaging of particular items; and/or feedback from consumers or reactions by other researchers to NIDRR grant results. Links to related information developed by OSEP or RSA grantees and others can be added at this level.

The development of these disability research topical gateways reflects a way of capturing information. The gateways, although developed on the WWW, will also be made available in other formats in a variety of configurations depending upon the informational need. Once a critical mass of this information has been entered, the informational base could be used in a variety of ways including:

- development of press releases for background and related information often needed by journalists;
- incorporation into informational and awareness material being developed by grantees;
- used online to assist in answering consumer questions more rapidly and with other information or referral activities;
- development of presentations, poster sessions, or articles dealing with current NIDRR research results;
- used by consumers and researchers to learn more about NIDRR funded activities and results; and
- used by NIDRR researchers as a free-of-charge way to access new audiences in new ways.

It is hoped that NIDRR grantees will view the developing information gateways as a new avenue for dissemination of your NIDRR grant results. Information on your WWW site can be linked via these gateways to create a new way of organizing disability research information. For those grantees without WWW sites, this information gateway alternative provides a new outlet that you can use in your outreach effort. Most importantly, through the participation of all NIDRR grantees, these information gateways can produce a unique and innovative approach to information dissemination.

Assessing the Communication Power of Your WWW Site

A variety of ways exist to examine your World Wide Web (WWW) site. In fact, a thriving industry has developed with consultants and independent agencies that, for a fee, will analyze and evaluate your WWW site. Given the current and projected future use of WWW sites, all of us should be measuring the "communication power" of our WWW Sites.

What factors can be used in measuring "communication power?" The following represent areas or dimensions of your WWW sites that can be used in structuring evaluation activities. The primary information source for the majority of these evaluation efforts is the current users and the target audience(s) of your WWW site.

WWW site evaluation can address the following areas:

- Content of Your WWW Site
- Ease of Navigation
- Visual Attractiveness
- Organization of WWW Site Information
- Interactive Dimensions such as Chat Rooms
- Search Engine Availability
- Graphics, Audio, Video, Animation Components
- Accessibility Provisions
- Uniqueness, Innovativeness, and Currency of Information
- Links Within and Out of Site
- Forms, Electronic Mail, and Other Methods for Interacting with Website Personnel

Visitors to websites can be asked for information about their "visit." Using forms, e-mail, and other accessible formats for obtaining this information, visitors might be asked:

- How much did you enjoy your visit to our website?
- Were you confused at any point during your visit?
- Did you become frustrated in navigating our site at any point?
- Did you find your visit to be useful or a waste of time?
- What did you find to be most useful and least useful in the site?
- Did our website meet or exceed your expectations?
- What was your level of satisfaction with the site?
- Would you return to our website?

Your website is creating an impression of your project and your organization as a whole. Use of visitor sampling is a way to sense how others perceive the communication power of your WWW site. Evaluation data reveal relative strengths and weaknesses of your site. Experience teaches that websites must be dynamic, ever-changing entities to retain their positive impression on users.

There are several strategies that can be used to collect data concerning your site. Four basic methods have proven effective:

- **User-Behavior Tracking**—this strategy measures how much time users of your site are spending at each location, what features they are using, what paths they are choosing to move through the site, and where they came from. This strategy requires special software and may require consultant assistance.
- **Online User Survey**—this strategy can be effective in requesting or requiring users to give some feedback information about their perception of specific features of your site.
- **Focus Groups**—this strategy can be used to obtain fairly detailed information about user perceptions and also generate ideas about new or improved features of your site.
- **Benchmark Comparison**—this strategy allows website developers (and others) to compare several sites that are similar in their purpose, orientation, and target audience. This type of comparison allows for developers to project areas in which their site could be generally improved and/or made more accessible.

Concept mapping can also be used as a tool in evaluating websites. Generally speaking, conceptual mapping for the purpose of website evaluation simply provides an activity-base for convening a wide array of stakeholders that may find your website useful from their varied perspectives. The activity of the convened group is to "map out" the content of your website and determine the relative importance of the components from their individual perspectives. Concept mapping can also be used to elicit information from stakeholders concerning their expectations for your website and how well these expectations have been met by your website to date. Statistical analyses of the resulting data can display relationships between the "concepts" mentioned by the stakeholders.

Many sites employ a traditional survey approach to gather information from visitors to their websites. These website forms can gather any of the data mentioned earlier or can focus on particular parts of your website that you might particularly want to learn more about.

As use of the WWW increases, it becomes more important for us to evaluate the degree of effectiveness the medium has for your target audiences. Website evaluation is an activity that merits increased attention from all who create and maintain sites on the WWW.

NIDRR Grantees and Staff Receive Recognition

The NCDDR congratulates each of the following NIDRR grantees or staff members. All NIDRR grantees are encouraged to contact the NCDDR with information to share in future issues of *The Research Exchange.*

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Dr. Katherine D. Seelman, Ph.D., Director of the **National Institute on Disability and Rehabilitation Research (NIDRR),** was chosen to address the Sixth International World Wide Web Conference (WWW6) in Santa Clara, California, on April 6, 1997. This forum was used to launch the *Web Accessibility Initiative* (WAI), which is coordinated by the World Wide Web Consortium (W3C). The project will guide the development of industry-sponsored specifications for accessibility of software programs and technology that will use the Internet as a means of communications. Interest also has been received from several European nations and trade organizations in supporting the project. The project is jointly funded by the Federal government, several foundations and the technology industry, represented by the top 150 international technology corporations that comprise the W3C. NIDRR/OSERS and the National Science Foundation are the principal Federal participants in this project.

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NIDRR-funded researchers **Dr. Wayne Gordon** and **Dr. Scott Richards** were appointed to the National Center for Medical Rehabilitation Research (NCMRR) Study Section in late 1996. The purpose of this expert group is to review grant applications and make funding suggestions to the NCMRR.

Dr. Gordon, Principal Investigator of the **Rehabilitation Research and Training Center on the Community Integration of Individuals with Traumatic Brain Injury** at Mount Sinai Medical Center, was also honored on October 1, 1996. He was presented with a Recognition Award from the New York State Department of Health for "...his visionary work, dedicated efforts and steadfast commitment on behalf of individuals and families who experience brain injury." Dr. Gordon can be contacted at **(212) 241-7917** or by e-mail: **wayne_gordon@smtplink.mssm.edu**

Dr. Richards is Director of Research at the **RRTC in Secondary Complications in Spinal Cord Injury,** Spain Rehabilitation Center, at the University of Alabama—Birmingham. In December, 1996 Dr. Richards was awarded Diplomate status by the American Board of Rehabilitation Psychology. For more information, contact him at **(205) 934-3454** or by e-mail: **richards@rehabm.uab.edu**

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The May 19, 1997 edition of *U.S. News and World Report Online* featured an article called "Catching Sight of the Web" It is found on the World Wide Web at: **http://www.usnews.com/usnews/nycu/blinhigh.htm**
The online story is specially designed with large print, real audio, color combinations and text to try to accommodate the blind or low-vision user. To complement the story, a "resources" section has been added which includes a mention of **ABLEDATA,** and acknowledges that it is sponsored by the Department of Education's **National Institute on Disability and Rehabilitation Research.** The *U.S. News* site links to other NIDRR-supported grantees such as the **Trace Center** and **WGBH,** as well as other resources.

- **Lynn Halverson** is Principal Investigator for **ABLEDATA** and can be reached at **(301) 572-0477** or by e-mail at **abledata@microint.com**
- **Gregg Vanderheiden, Ph.D.** is Principal Investigator of the **RERC on Adaptive Computers and Information Systems** and **Understanding and Increasing the Adoption of Universal Design in Product Design** at the Trace Center. He can be reached at **(608) 262-6966** or by e-mail at **gv@trace.wisc.edu**
- **Larry Goldberg,** Principal Investigator for CPB/WGBH's **Motion Picture Access II** project, can be reached at **(617) 492-2777** or via e-mail at **larry_goldberg@wgbh.org**

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Researchers at **Meeting the Challenge, Inc.** have been honored for the second consecutive year by the Colorado Chapter of the Technology Transfer Society for work done in transferring Small Business Initiative Research (SBIR) results into technology products. This year's award is for *PocketCoach,* a hand-held audio prompting device that was developed through research sponsored by the NIDRR. Researchers **Daniel K. Davies (Transition AbleAide: A Needs-Based Computer System for Matching Assistive Technology and Home Automation Devices to Students Transitioning from School to Adult Life Project)** and **Steven E. Stock (MenuCoach: A Multimedia Software Tool to Enhance Independence and Knowledge in Menu Planning, Grocery Shopping, Meal Preparation, and General Nutrition for Individuals with Developmental Disabilities Project)** were at the Denver Museum of Natural History in January of 1997 to receive the award. The two men accepted the same award in 1996 on behalf of Meeting the Challenge for developing Phase I and II SBIR projects into *MoneyCoach,* a multi-media budgeting and checkbook management software program for persons with developmental disabilities. Meeting the Challenge is the only company to ever receive more than one award from the Society, and the only company ever to receive an award for work done in the disability field. For more information, call Meeting the Challenge, Inc. at **(719) 444-0252,** or send e-mail to Daniel Davies at **dkdavies@mtc-inc.com** and Steven Stock at **snohawke@mtc-inc.com**

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NIDRR Grantees and Staff Receive Recognition

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Brian Bolton, Ph.D. and **Jeanne Neath, Ph.D.** of the **Rehabilitation Research and Training Center on Enhancing Employment** at the University of Arkansas received the *1996 Research Award* from the American Rehabilitation Counseling Association (ARCA). The award, shared with Dr. James Bellini of Syracuse University, was given for their joint study "Influence of Applicants' Personal History on Counselors' Ratings of Functional Limitations." The study was published in the *Rehabilitation Counseling Bulletin, Vol. 39,* pages 265-275. The award was presented at the ARCA National Convention in Orlando, Florida on April 5, 1997. Drs. Bolton and Neath serve as faculty at the Arkansas Research & Training Center. Contact **Roy C. Farley, Ed.D.,** Principal Investigator of the Arkansas RRTC on Enhancing Employment, at **(501) 624-4411** or by e-mail at **rfarley@comp.uark.edu**

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Dr. William Anthony, Principal Investigator of the **Research and Training Center in Rehabilitation for Persons With Long-Term Mental Illness** received two awards in 1996. The American Psychiatric Association presented him the *Van Ameringen Award in Psychiatric Rehabilitation* for his "tireless advocacy on behalf of people with severe mental illness, noteworthy contributions in research and scholarship, and innovative approaches to development of a wide variety of psychiatric rehabilitation." He also received the GROW In America's *Con Keyogh Visionary Award* for "sharing with the world a vision of recovery." Dr. Anthony may be reached at **(617) 353-3549** or by e-mail: **wanthony@bu.edu**

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Researchers of the **Northern New Jersey Model Spinal Cord Injury System** have been recognized for a number of achievements. Dr. Joel DeLisa, Principal Investigator, was awarded the *Outstanding Service Award* from the Association of Academic Physiatrists for 1997. He also received the *Sixteenth Annual Sidney Licht Lectureship* award from the Ohio State University School of Medicine on March 7, 1997. Dr. DeLisa gave the *Fourteenth Annual James W. Rae Scientific Day Lecture* at the University of Michigan Medical Center on May 9, 1997.

Marca L. Sipski, M.D., and **Craig J. Alexander, Ph.D.,** Project Co-Directors, received the *Elizabeth and Sidney Licht Award* for the most outstanding article published in the *Archives of Physical Medicine and Rehabilitation.* The article entitled "Orgasm in Women with Spinal Cord Injuries" was published in Vol. 76 (December 1995). Drs. Sipski and Alexander also recently co-edited the book *Sexuality with Disability and Chronic Illness: A Health Practitioner's Guide* which will be available from Aspen Publishers in August, 1997. For more information, contact Drs. DeLisa, Sipski, and Alexander at **(201) 243-6805.**

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Steven J. Taylor, Ph.D., Principal Investigator of the **National Resource Center on Community Integration for People with Mental Retardation,** has received the *1997 Research Award* of the American Association on Mental Retardation. Dr. Taylor received the award "for significant contributions to the body of scientific knowledge in the field of mental retardation." His NIDRR-funded research has led to "the development of new concepts and principles that have gained widespread acceptance in the field." Dr. Taylor can be contacted for more information at **(315) 443-3851** or via e-mail at **thechp@sued.syr.edu**

How To Contact The National Center For The Dissemination Of Disability Research

Call Us
1-800-266-1832 or 512-476-6861 V/TT
8 A.M.–NOON and 1 P.M.–5 P.M. C.T.
Mon.–Fri. (except holidays)
or record a message 24 hr./day

Explore Our Web Site
http://www.ncddr.org/
E-mail Us
jwestbro@sedl.org

Write Us
National Center for the
Dissemination of Disability Research
Southwest Educational
Development Laboratory
211 East Seventh Street, Suite 400
Austin, Texas 78701-3281

Visit Us
In downtown Austin, Texas
4th floor, Southwest Tower,
Brazos at 7th St.
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THE
Research Exchange

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***The Research Exchange* is available in alternate formats upon request.**

At a Glance

A WORD FROM THE DIRECTOR

Is Disability Research Useful?

Millions of dollars are spent annually to support the design and implementation of activities that can be lumped under the general topic of "disability research." These activities tend to be far-flung and divergent in nature and often embrace a variety of information-generation, information-implementation, and information-dissemination efforts. Quite often, however, the intended "user" of the produced information is only vaguely defined or unknown.

Research on effective dissemination has clearly pointed to several characteristics that are related to the utilization of information by intended user groups:

- Each user determines how and when she or he will (or will not) use information.
- Intended user groups must be defined well enough by the disseminator to know the context and content of information that is desired by the user.

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How Do Consumers Get Information They Can Use?

Is disability research information useful to people with disabilities? If it is, where and how do they find it? Would the information be more useful if it were more accessible? The NCDDR recently conducted a nationwide survey of consumers to find answers to these and other related questions.

While research results generally are *available* to those who seek them, they are not widely *accessible* to several critical audiences, namely persons with disabilities, their families, advocates, or direct service providers (Edwards, 1991). There is a critical distinction between *availability*—which may mean, for example, that a scholarly article may be found in a professional journal, or that a final report will be sent upon request—and *accessibility,* which implies ease of access and simplicity of comprehension and use. Better understanding of consumers' information-gathering practices and preferences can help those who conduct NIDRR research to make their results more useful and accessible to consumers (SEDL, 1995).

Edwards (1991) notes that finding the proper fit among the dissemination medium, user, and the knowledge or product "includes recognizing that no one channel is always sufficient" (p. 79). The media and formats available for dissemination are increasing rapidly with new technological development. This growth is helpful in meeting the need for numerous and varied dissemination media (SEDL, 1995).

However, it is critical to keep in mind that "consumers continue to lack the basic tools required for accessing what is currently available" (Leung, 1992, p. 293). For example, computers may help 'level the field' of communications, but if consumers with disabilities cannot afford to own computers, this potential is not realized.

In an effort to understand the tools consumers use and prefer, a literature search was undertaken. No literature was identified that directly asked consumers with disabilities how they find and access information that is useful to them. Similarly, an on-line search of the Educational Resources Information Center (ERIC) yielded no citations. The National Rehabilitation Information Center (NARIC), through its REHABADATA on-line database (http://www.cais.com/naric/rehabdata/rehabdata.html), offered four citations focusing on Participatory Action Research as a means of involving consumers in rehabilitation research, but with little emphasis on dissemination and utilization. Newman and Vash (1994) prepared a report for the

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How Do Consumers Get Information They Can Use?

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National Council on Rehabilitation Education. As part of this report, the authors noted that dissemination efforts of NIDRR grantees have been more successful in reaching other professionals than consumers and other audiences.

The purpose of the NCDDR consumer survey was to identify the ways consumers (people with disabilities and their families) find information that is useful to them in their daily lives. These data can be compared with the modes and formats used by NIDRR researchers to determine the degree of match between formats and modes consumers prefer and what researchers typically use.

Who are consumers with disabilities?

It is difficult to comprehensively identify the population of Americans who have physical or mental impairments that limit one or more of life's activities. The Rehabilitation Research and Training Center on Disability Statistics (http://dsc.ucsf.edu/) proposed a figure of 36.1 million, based on the 1990 National Health Interview Survey. The Americans With Disabilities Act of 1990 (Public Law 101-336, 104 Stat. 328) estimated some 43 million people with disabilities. The ADA definition was broadened to include those who have recovered from an impairment in the past, as well as people regarded by others as having an activity-limiting impairment (LaPlante, 1992). Using recent trends in disability rates reported by Keye, LaPlante, Carlson, and Wenger (1997), 15% of the current estimated population of 267,982,550 (U.S. Census Bureau, 1997) would yield 40.2 million persons with disabilities in the United States.

This group—people with disabilities—includes individuals with diverse cultural, socioeconomic, age, and disability characteristics. One thing this heterogeneous group has in common, however, is the need for information to help them in their daily lives. In order to make NIDRR-sponsored disability research information accessible and usable, we must know more about consumers with disabilities and their information needs.

There is no national database of consumers with disabilities from which to draw a sample of individuals to survey. The NCDDR elected to use the loose national network of independent living (IL) organizations to ask the opinions of consumers. Independent living centers, including Title VII-funded Part C Centers for Independent Living (CIL), are community-based and consumer-run organizations. Also included with this group are the Statewide Independent Living Councils (SILC), which foster communication among CILs in each state. The consumers who participate with the CILs, SILCs, and other independent living programs that do not fall under Title VII, are generally individuals who have searched for, found, and are using services in their community. That is the population sampled by this survey activity. Although the survey is limited by the fact that many consumers who have not sought such services are not represented, that is offset by the fact that centers located throughout the country were invited to participate. Responses were received from all 50 states.

The NCDDR staff focused on this group in its initial attempt to identify the information needs and preferences of consumers. If this group, for example, expressed no need for disability research information, what would that imply for individuals with disabilities? If the consumers who participate with independent living organizations do not use the Internet, or do not know how to find disability research information, what would that suggest for the larger, more varied population of people with disabilities as a whole?

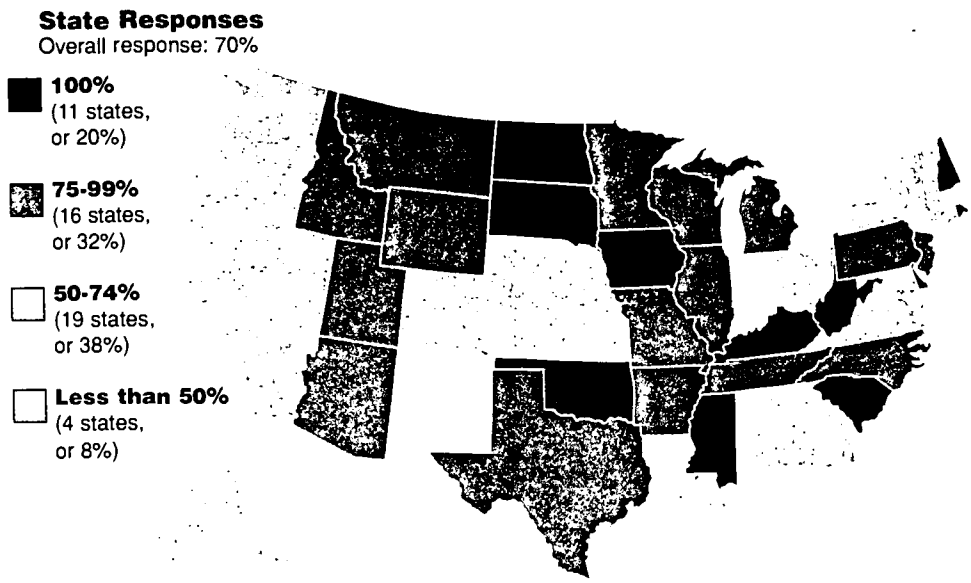
Field Test Procedures

A two-part field test activity was used to develop and pilot materials and procedures used for the survey. First, a draft survey instrument was developed to identify the primary formats and modes that consumers prefer as ways to get information. NCDDR staff, a professional researcher, and the members of a focus group of people with disabilities reviewed the consumer survey draft and suggested modifications and additions. The survey instrument was translated into Spanish by NCDDR staff with assistance from staff members of the Southwest Educational Development Laboratory (SEDL) Language and Diversity Program. The survey was modified to gather similar data from independent living organization administrators.

Site visits were made to four CILs located in different geographical regions of the state of Texas to gather first-hand information and impressions from administrators and consumers, and to observe the survey administration process. Different cultural groups, including Anglo (White), Hispanic, and African-American cultures, were represented among staff and consumers at these CILs. Spanish-speaking consumers and staff members were asked to comment on the Spanish translation of the draft consumer survey. A total of 32 consumer responses and 5 administrator responses were received. A report of this field test is available from the NCDDR on request (*Report of Field Test Results: Survey of Consumers with Disabilities,* October, 1996).

A second field test to pilot the mail-out and return mail procedures was conducted with eight IL centers located in four states. Seven of the volunteer field test sites returned materials and provided feedback on the materials, survey instructions, and procedures. The administrators commented on the need for such information and suggested that most independent living organizations would be eager to participate in the survey activity. A total of 37 consumers and 7 administrators responded. These data, along with the data from the initial field test, were included in the analysis of the data gathered from the survey.

Survey Process



Procedures

The NCDDR plan to gather information from consumers with disabilities focused on asking for voluntary help from independent living organizations, including:

- Centers for Independent Living (CILs), funded under Title VII of the Rehabilitation Act of 1973, as amended
- Statewide Independent Living Councils (SILCs) and
- Other independent living programs providing services which may assist people with disabilities in living more independently (ILPs).

Telephone calls were made to administrators to explain the purpose and procedures of the survey, and to ask if they would volunteer to participate. A group of 514 independent living organizations were identified in the Independent Living Research Utilization (ILRU) *Directory of independent living centers and related organizations, Vol. 18,* January, 1996. The final data base included 502 organizations, as some from the initial list were determined to no longer be functioning. Of these, 117 did not participate for the following reasons:

- some programs listed in the *Directory* were not independent living centers or SILCs and did not have direct contact with consumers;
- centers located outside the continental US, Hawaii, and Alaska were not contacted;
- direct contact was never made with 30 centers (in some cases messages were left but no response was received, and in other cases phone calls were never answered);
- many of the listings for the SILCs included a second representative, while only one was asked to participate from each state; and
- branch offices for some centers did not participate.

A total of 380, or 99%, of the 385 administrators contacted, did volunteer to participate in the survey. Only four administrators did not agree to participate, and one did volunteer but called later to decline due to an increased work load. The independent living organizations represented among the volunteers were: 55% Title VII CILs, 13% SILCs, and 32% other ILPs.

The volunteer administrators were asked to solicit survey responses from a minimum of five consumers with disabilities, or, as appropriate, to designate a representative to administer the surveys. This ensured that respondents were people who receive services or support from the groups contacted and that the anonymity of the consumers was protected. In addition, the administrators were asked to complete a similar survey from the perspective of their role.

Follow-up telephone calls were made, letters were sent to encourage participation, and duplicate packets were sent to volunteers who did not receive the original mailed materials.

Participants

Materials were returned from 70% (265) of the volunteering organizations. A maximum total of 1,900 consumer responses was possible from the 380 organizations that volunteered, and a maximum of 1,325 was expected from the 265 volunteers who actually returned the survey materials. Not all volunteers returned five surveys, while a few returned more than five. A total of 1,170 consumer surveys were received, or 88% of the total projected if all responding organizations had returned five surveys. Over half of the respondents (56%, or 148) did return five consumer surveys. Fewer than five surveys were returned by 38% (100) of the respondents, while 6% (17) returned more than five surveys. Seven of the volunteers did not return any consumer surveys (2%), and only submitted administrator survey forms. An average of 4.6 consumer surveys were received per responding IL organization. Administrator surveys were not returned by 10 (3%) of the volunteering organizations.

All 50 states were represented among the responding independent living organizations. Eleven states had a 100% response rate from all volunteering organizations in the state, and only four states had less than a 50% response rate. Forty-nine states were represented among those that returned five consumer surveys. More than five surveys were returned from 12 states (24%), while respondents from 40 states (80%) returned fewer than five surveys. Sixty percent of the surveys were received from Title VII CILs, 10% from SILCs, and 30% were received from other independent living programs.

A total of 15 Spanish-language consumer surveys were returned from 12 volunteer organizations in 7 states. Five groups from California, two from Texas, and one organization from each of five other states returned surveys in Spanish.

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Materials

Each administrator who volunteered to participate in the study received a packet by US Mail. Materials included an overview of the survey purpose and process; five color-coded consumer forms in both English and Spanish, with a bilingual introduction sheet attached to each form; and one color-coded administrator form. If requested, alternate formats were sent, such as large prin (two requests), audio tape (two requests), and computer disk (three requests). Also included with the survey materials were NCDDR notepads for respondents, and a postage-paid envelope for returning the survey forms.

Administrator Survey

1. How does your organization **usually** get information that you use?
(C... that apply. Some examples are given for each answer. Space is provided if y... specific examples.)
☐ ... (etc.):
☐ ... (etc.):
☐ ...

Encuesta para Consumidores

See other side for the questions in English.

1. ¿Cómo se informa Ud., **en general**? *(Marque todas las frases apropiadas. Hay alguno ejemplos para cada respuesta. Hay espacio si Ud. quiere poner un ejemplo específico.)*
☐ Medios de comunicación popular *(televisión, radio, películas...)*
☐ Medios ...

Consumer Survey

(Vea al otro lado para las preguntas en español.)

1. How do you **usually** get information that you use?
(Check all that apply. Some examples are given for each answer. Space is provided if you would like to include specific examples.)
☐ Popular media (*television, radio, movies, videos, etc.*): _____
☐ Print media (*books, magazines, newspapers, pamphlets, brochures, etc.*): _____
☐ Non-print media (*Braille, audio tapes, readers, etc.*): _____
☐ Professional people (*doctors, lawyers, teachers, caseworkers, etc.*): _____
☐ Other people (*parents, family, friends, co-workers, etc.*): _____
☐ Groups (*meetings, workshops, classes, conferences, etc.*): _____
☐ Computer (*electronic mail, Internet, etc.*): _____
☐ Other (*Brief description*): _____

2. What ways do you **like** to get information?
(Check all that apply)
☐ Regular print
☐ Large print
☐ Braille
☐ Audio tape
☐ Video tape
☐ CD-ROM
☐ Computer (file/disk)
☐ Computer (online)
☐ Non-English language: ☐ Spanish ☐ Other: _____
☐ Other (*Brief description*): _____

3. Do you ever get information from the **Internet**?
(Please check one best answer.)
☐ Very often
☐ Often
☐ Only once/twice
☐ Never
☐ Don't know

4. Is information from disability research useful to you?
(Please check one best answer.)
☐ Yes
☐ No
☐ Don't know

5. Do you know how to find information from disability research?
(Please check one best answer.)
☐ Yes
☐ No
☐ Don't know

3-97 1.3 National Center for the Dissemination of Disability Research

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Preliminary Findings and Implications

Initial results from the consumer survey are presented below. The responses of all consumers to each question are reported. The consumer group was then divided into four regions to see if any differences were identified. These regions, based on census reporting, are Northeast (NE), South (S), Northcentral (NC), and West (W).

QUESTION ONE

How do you usually get information that you use?

The most frequent way consumers get information is through 'Popular Media' (76%), which included television, radio, movies, and videos. 'Print Media' (73%) including books, magazines, newspapers, pamphlets, brochures, etc.) was also reported by consumers as a frequent information source. 'Non-print Media' (Braille, audio tapes, readers) was least frequently identified by consumers. The table below shows the percentage of consumers who reported using these information sources.

Information Sources	All Consumers	NE	S	NC	W
Popular Media (television, radio, movies, videos)	76%	72%	79%	75%	78%
Print Media (books, magazines, newspapers, pamphlets, brochures)	73%	77%	72%	71%	71%
Non-Print Media (Braille, audio tapes, readers)	20%	21%	20%	18%	19%
Professional People (doctors, lawyers, teachers, caseworkers)	62%	65%	60%	64%	58%
Other People (parents, family, co-workers)	68%	72%	64%	70%	67%
Groups (meetings, workshops, classes, conferences)	63%	67%	58%	62%	64%
Computer (electronic mail, Internet)	27%	29%	24%	25%	32%

A few regional differences were observed. Consumers from the South reported higher use of 'Popular Media' (79%) and consumers from the Northeast had higher responses for 'Print Media' (77%) than the total group of consumers. Consumers in the West identified 'Professional People' (58%) as an information source less often than consumers in other regions. Respondents from the Northeast reported 'Other People' as an information source more often (72%) than the other groups, while those from the South identified 'Other People' less often (64%) than did consumers in other regions. This split between the Northeast and the South was also reflected in their responses to 'Groups' as an information source. Consumers in the Northeast identified 'Groups' more often (67%) than did all consumers, while those in the South reported 'Groups' less often (58%). Consumers from the Western region identified 'Computers' more often (32%) than other regions or all consumers.

QUESTION TWO

What ways do you like to get information?

The most frequent response was 'Regular Print' (66%) and the least frequent responses were 'Braille' (5%) and 'Non-English Language' (3%). The table below shows the percentage of consumers who preferred to receive information through the various information formats.

Information Formats	All Consumers	NE	S	NC	W
Regular Print	66%	68%	67%	67%	63%
Large Print	25%	24%	22%	25%	27%
Braille	5%	4%	6%	5%	5%
Audio Tape	28%	26%	27%	30%	28%
Video Tape	36%	32%	38%	40%	32%
CD-ROM	13%	11%	11%	14%	14%
Computer (file/disk)	25%	26%	25%	23%	25%
Computer (on-line)	26%	25%	25%	24%	28%
Non-English Language*	3%*	3%	3%	2%	4%

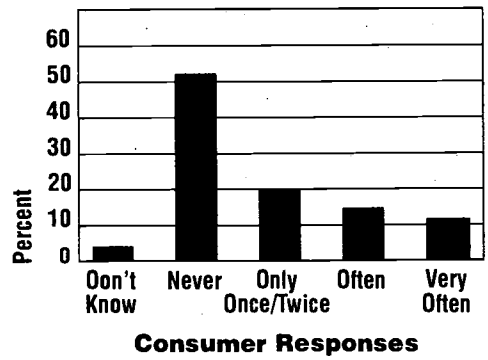
* Non-English Language: (n = 35)
Spanish: 15
American Sign Language: 7
German: 2
Italian: 1
Portuguese: 1
Russian: 1
Unspecified: 8

Fewer regional differences were observed among responses to this question. Consumers from the Northeast and the West reported slightly lower preferences for 'Video Tape' (32%) while Northcentral consumers reported a higher preference for 'Video Tape' (40%) than did consumers as a whole.

QUESTION THREE

Do you ever get information from the Internet?

The response choices for this question were 'Don't Know,' 'Never,' 'Only Once/Twice,' 'Often,' and 'Very Often.' Over 50% of the consumers indicated that they have 'Never' used the Internet to obtain information, while 4% responded 'Don't Know.' Only 25% of consumers reported using the Internet 'Often' or 'Very Often' to get information. The graph below illustrates consumer responses to Question Three.

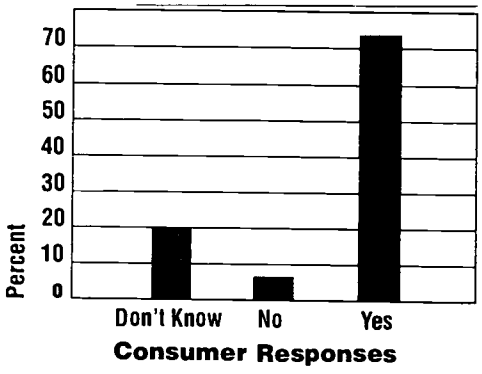


Some regional differences were noted in response to the question about use of the Internet. Fewer consumers in the West reported 'Never' using the Internet to get information (46%), while those in Northcentral region had a higher response of 'Never' (56%) than did the group of consumers as a whole.

Do you ever get information from the Internet?	All Consumers	NE	S	NC	W
Don't Know	3%	3%	3%	4%	4%
Never	51%	51%	53%	56%	46%
Only once/twice	20%	21%	16%	20%	23%
Often	15%	16%	13%	13%	17%
Very Often	11%	10%	15%	7%	11%

QUESTION FOUR

Is information from disability research useful to you?



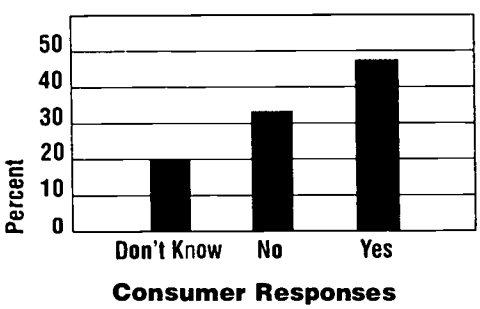
The response choices were: 'Yes,' 'No,' and 'Don't Know.' Responses to Question Four showed the majority of consumers (72%) believe this type of information is useful, with 'Don't Know' (20%) as the next most frequent response selected. Only 8% of consumers responded 'No,' that information from disability research is not useful to them. The graph above illustrates the responses of consumers.

Consumers from the South had a much lower response to 'Don't Know' (14%) and a higher response to 'No' (13%) than consumers from other regions. Northcentral consumers responded 'Yes,' information from disability research is important to them, more often (75%) than consumers as a whole or from any other region.

Is information from disability research useful to you?	All Consumers	NE	S	NC	W
Don't Know	20%	22%	14%	19%	22%
No	8%	6%	13%	6%	8%
Yes	72%	72%	72%	75%	70%

QUESTION FIVE

Do you know how to find information from disability research?



The response choices were: Yes (48%), No (32%), and Don't Know (20%). Less than half of the consumers stated that they know how to find disability research information.

Fewer regional differences were observed. Consumers from the Northcentral regional reported fewer 'Don't Know' responses (16%) while Western consumers responded 'Don't Know' (23%) more often than other groups or than all consumers.

Do you know how to find information from disability research?	All Consumers	NE	S	NC	W
Don't Know	20%	20%	19%	16%	23%
No	32%	32%	32%	34%	30%
Yes	48%	48%	49%	50%	47%

Summary

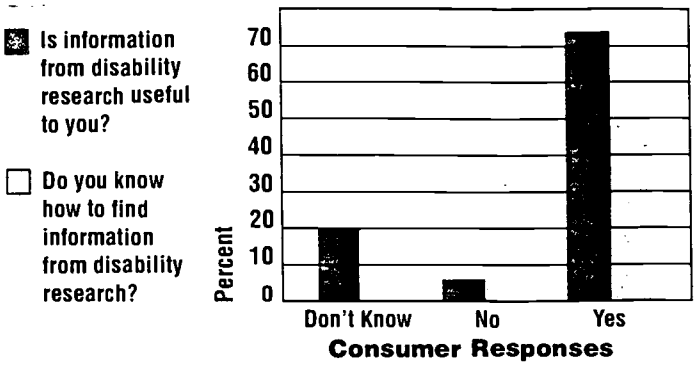
The data from the consumer survey help give a tentative picture of what consumers around the country identify as usual and preferred sources of information, as well as an indication of their current use of the Internet, and their perceptions about the importance and accessibility of disability research information. A general description of perceptions of 'the average consumer' can be drawn from this information. A comparison with the information formats and modes used by researchers to disseminate information should be made to see if there is a match with what consumers use and prefer to use.

Over three-quarters of consumers identified 'Popular Media,' including television, radio, movies, and videos as a source of information. Nearly as many also identified 'Print Media.' People, including professionals and others, as well as 'Groups,' were identified as information sources by about two-thirds of consumers. 'Computers' and 'Non-Print Media' were identified as information sources by one-third or fewer of the consumers.

The ways consumers prefer to get information were also varied. Only two-thirds of consumers identified 'Regular Print' as a preferred format. 'Video Tape,' the second most preferred format, was identified by over one-third of consumers. 'Audio Tape,' 'Computer' (disk and on-line), and 'Large Print' were preferred by over one-quarter of the consumers who responded to the survey.

Use of the Internet reflected the responses about computer use in the first two questions. About one-fourth of consumers reported using the Internet 'Often' or 'Very Often,' while the great majority of consumers used the Internet 'Never' or 'Only Once/Twice.' Regional differences show more use of the Internet by consumers in the West, and less by those in the Northcentral region.

New questions emerge when responses to the two questions about information from disability research are compared. The comparative graph on the following page shows that although nearly three-quarters of consumers responded that information from disability research is useful to them, less than half report that they know how to find this information. The issue of accessibility of information for people with disabilities is undoubtedly reflected in these responses. A much larger percentage of consumers reported they do not know how to get information generated by disability research (32%), than those who felt such information was not important (8%). The number who responded 'Don't Know' was the same for both questions (20%). These data reflect a potential issue related to disability research dissemination strategies currently in practice.



Who is the "average consumer?"

From the information about consumers reported in this brief survey, a "typical consumer" in the NCDDR survey can be described. This typical consumer uses popular and print media as information sources, and does not use a computer as a primary information tool. The average consumer prefers regular print, followed by video tape and audio tape formats. The typical consumer has very little or no experience using the Internet, although this varies across regions. Finally, the average consumer believes that information from disability research is important, but may not know how to find this information.

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NIDRR Grantees and Staff Receive Recognition

The NCDDR congratulates each of the following NIDRR grantees or staff members. All grantees are encouraged to contact the NCDDR with information to share in future issues of *The Research Exchange.*

~

Dr. Mitchell Rosenthal, Principal Investigator of the **Southeastern Michigan Traumatic Brain Injury System** (http://www2.sedl.org/4d.acgi$retrievegrantee?H133A20016) located at the Rehabilitation Institute of Michigan, Wayne State University, was recognized by the Division of Rehabilitation Psychology of the American Psychological Association (APA)(http://www.apa.org/). He received the *Roger Barker Research Achievement Award* for career achievement in rehabilitation research at the 105th Annual Meeting of the APA held August 15-19, 1997 in Chicago. For more information, **Dr. Rosenthal** may be reached at **(313) 745-9769** or via e-mail: **mrosenth@med.wayne.edu**

~

Dr. Harry Levitt, Principal Investigator of the **Rehabilitation Engineering Research Center on Hearing Enhancement and Assistive Devices** at **The Lexington Center, Inc.** (http://gramercy.ios.com/~reslex/), received the *Special Friends of People with Hearing Loss Award.* The honor was conferred at the annual convention of the Self Help for Hard of Hearing People (http://www.shhh.org/) in June, 1996. The recognition is presented to organizations or people who have worked diligently over time to improve the life and circumstances of people with hearing loss. **Dr. Levitt** can be reached at **(718) 899-8800,** or via e-mail: **lexrsch@transit.nyser.net**

~

Dr. Gregg Vanderheiden of the **Trace Research and Development Center** (http://trace.wisc.edu/) was recently honored with the third annual *Yuri Rubinsky Memorial Web Award* (http://www.webjammers.com/www6-press/press-10am.html). **Dr. Vanderheiden** received this award in April, 1997 at the Sixth International World Wide Web Conference (http://www6conf.slac.stanford.edu/) in Santa Clara, California, for his contributions in promoting accessibility through technology for people with disabilities. The recognition from the Yuri Rubinsky Insight Foundation (http://www.yuri.org/) includes a monetary award of $10,000.

Dr. Vanderheiden is Principal Investigator for two current NIDRR grant activities, **Understanding and Increasing the Adoption of Universal Design in Product Design** (a Research and Demonstration project) and the **RERC on Adaptive Computers and Information Systems** (a Rehabilitation Engineering Research Center). He is also a Co-Investigator for the **RERC on Universal Telecommunications Access** (http://tap.gallaudet.edu/prj5.htm) based at Gallaudet University. He can be reached at the Trace Center, University of Wisconsin, at **608-262-6966** or via e-mail: **gv@trace.wisc.edu**

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A WORD FROM THE DIRECTOR

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- Information must be shared through a medium that the intended user deems to be accessible.
- The utilization of information usually requires more than a one-time exposure to basic information.

Clearly, the extent to which a disseminator "understands" the intended users, the more likely the dissemination—utilization process is to be successful. All too often, dissemination is approached as an act of documentation. While documentation of research findings is important and inherently critical to potential use of the resulting information, it is not adequate as the predominant strategy and basis of effective dissemination and utilization. Grantees should not approach dissemination as if it were simply a matter of documentation of research results or findings.

Effective dissemination is a process that requires a match between the time and content-related needs of the intended user, and the information that is available. It is virtually impossible to accomplish the goal of dissemination—*utilization*—without knowing how intended users typically access information that they use. The NCDDR has undertaken a survey activity to identify some of the information-utilization characteristics of people with disabilities and their families. It is hoped that these initial survey data are useful to NIDRR grantees in developing a dissemination plan involving outreach to consumer groups. This issue of *The Research Exchange* reveals some of the findings relevant to consumers' utilization characteristics.

Also, I want to point out that the NCDDR survey data underscore the fact that consumers continue to have high regard for disability research. Mixed messages have been sent from some disability-related groups espousing that consumers could care less about disability research. It is important to know that consumers do care. It is also equally important to note that too many consumers appear to have limited or no dependable pathways to obtain information about disability research. A re-assessment of current dissemination strategies appears to be in order.

John D. Westbrook, Ph.D.
tor, NCDDR

NIDRR Grantees and Staff Receive Recognition

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The **Consumer Assistive Technology Transfer Network (CATN)** (http://www.rt66.com/catn.org/) has been awarded the *Non-Government (Lab) Organization Award* from the Federal Laboratory Consortium for Technology Transfer (FLC) (http://www.zyn.com/flc/). The award was presented in July at the FLC Joint Conference of the Mid-Continent Region/Mid-Continent Technology Transfer Center Affiliates in Denver, CO. On hand to accept the award was **Bill Newroe,** CATN Project Manager. Mr. Newroe and the CATN can be reached at **(505) 989-9408** (v), **(800) 866-2253** (v/tdd) or via e-mail: **catn@rt66.com**

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At a Glance

A WORD FROM THE DIRECTOR

How do you measure success?

For individuals working within a NIDRR-funded grant activity, the answer to the question, "How do you measure success?," initially may be—"to be successful in obtaining grant funding." As the quantity and quality of competition grows annually, surely being successful in this sort of competition process at the national level is an indicator of quality in targeting needed research but also carefully considered methods of conducting that research.

Given success in the grant competition process, how else do you measure success in your NIDRR grant activity? Some may indicate this type of success in terms of *timeliness* in initiating and conducting planned work, some would measure success in terms of *spending* at levels slightly less than those in an original proposal, yet others would measure success in terms of *implementation*—simply "doing what I said I would do."

These "measures" of success are often taken as "givens" in the responsible implementation of publicly-funded research activities. It is important to recognize that a growing number of disability stakeholders are asserting that true "success" can only be measured in terms of the impact produced by your grant-funded work.

Impact, of course, is highly variable from project to project. Generally, however, impact can be categorized by: usefulness in guiding overall judgments, facilitating improvements, and generating new knowledge. This issue of *The Research Exchange* suggests some data that may be useful in your further consideration of NIDRR grantee "success."

This issue adds to the data previously reported by the NCDDR concerning the types of products being reported

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Common Characteristics of NIDRR Grantees' Websites

NIDRR grantees' use of the WWW as a dissemination tool has grown quickly and currently reflects an aspect of NIDRR grant activity of approximately 58 percent of all grantees. A doubling in the overall number of NIDRR grantee websites—from 88 in mid-1996 to 176 at the close of 1997—parallels an accompanying trend in general WWW growth that has been and continues to be exponential. During the second half of 1993, the web doubled every three months, and currently is doubling in a period of less than six months (Gray, 1995, 1996a, 1996b).

In light of this trend, the NCDDR decided to analyze grantees' websites to profile their common characteristics. NCDDR staff analyzed 171 NIDRR grantee websites for the frequency of certain characteristics and for their overall accessibility.

The NCDDR chose 20 characteristics to use in the analysis procedures. These characteristics were chosen for their objective nature. NCDDR staff participating in the analysis engaged in several practice sessions to increase inter-rater reliability. The characteristics chosen for use in the analysis stemmed from a discussion in *The Research Exchange* (NCDDR, 1997a), addressing the "communication power" of a WWW site. From these general categories, the NCDDR staff chose the following observable NIDRR grantee website characteristics:

- **Access Icons**—inclusion of symbols indicating accessibility for users with disabilities, e.g. Bobby Approved, NCAM Globe, Speech Friendly Site icons
- **Audio**—inclusion of audio snippets as part of the website
- **Animation**—inclusion of moving graphics
- **Copyright**—inclusion of a copyright symbol
- **Disclaimer**—inclusion of a statement that the views expressed did not necessarily reflect the views of the Government and general responsibility for content of site
- **Forms/E-mail**—inclusion of feedback channels such as forms or electronic mail links

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A WORD FROM THE DIRECTOR

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by NIDRR grantees. Information from NARIC's *1995 and 1996 Compendium of Products of NIDRR Grantees and Contractors* is added to data reported by grantees for Fiscal Years 1993 and 1994. Dissemination trends of grantees appear to be clearer in this iteration of data reporting. One trend across these fiscal years demonstrates that approximately one-third of all grantees report a product in any single year.

This issue also highlights results of an NCDDR staff analysis of NIDRR grantees' websites. Approximately 175 NIDRR grantees currently report a website as part of their grant-related dissemination strategy. NCDDR staff have reviewed each grantee's website in order to develop a profile of common characteristics, including an objective assessment of the overall level of accessibility provided by each site for people with disabilities. The results of this analysis highlight areas that NIDRR grantees may wish to evaluate and consider the need for improvements.

As we all strive for success, it is useful to note that success comes as much from an attitude as it does from a set of tried-and-true actions. A philosophy of continuous improvement assists grantees in aspiring to continued success. Hopefully, analyses conducted and reported by the NCDDR may be helpful in thinking about new areas of potential improvement of current dissemination practices.

John D. Westbrook, Ph.D.
Director, NCDDR

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An electronic version of *The Research Exchange*, Vol. 3, No. 1 is available on the Internet at URL

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Common Characteristics of NIDRR Grantees' Websites

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- **Frames**—inclusion of multiple "window panes" on a single web page
- **Interactive Dimensions**—inclusion of special features to promote interaction among website users, e.g. chat rooms, bulletin boards, or other interactive elements
- **Graphics Only**—inclusion of only graphics to communicate information through the website
- **Links to NCDDR**—inclusion of a hypertext link to the National Center for the Dissemination of Disability Research (NCDDR)
- **Links to NIDRR**—inclusion of a hypertext link to the homepage of National Institute on Disability and Rehabilitation Research (NIDRR)
- **Links to NIDRR Projects**—Inclusion of one or more links to other projects funded by the NIDRR
- **Navigation Tools**—inclusion of "buttons" or other devices to assist users in moving around to major areas of a website
- **NIDRR Acknowledged**—inclusion of a statement that the website was an extension of a project funded by the NIDRR
- **Search Engine Availability**—inclusion of one or more search engines as part of the website design
- **Text and Graphics**—inclusion of both text and graphics within the website
- **Text Only**—inclusion of only text, with no graphics or inclusion of an alternative text-only site
- **Update Notice**—inclusion of a date indicating the last revision to the site
- **Video**—inclusion of video snippets as part of the website

NCDDR staff reviewed all grantee websites during the period from November 11-20, 1997. Sites that could not be accessed on the first attempt were re-tried the following day. Sites that could not be accessed the second day were not included in the review. Of the 175 websites, only four were unable to be accessed by NCDDR staff during the timeframe of the review.

Major Findings

The following were the major findings of the NCDDR review of websites:

- The most common feature of NIDRR grantees' websites is the use of forms and/or electronic mail links
- No websites used graphics only as a communication technique
- More than half (57 percent) of the grantees acknowledged NIDRR as the funding agency supporting the project work addressed on their website
- Approximately one-fourth (24 percent) of grantees include a link to NIDRR's homepage within their website
- Few grantees currently include a copyright symbol or disclaimer within their website

Specific frequencies of characteristics reviewed are reflected in Figure 1.

FIGURE 1
Percentage of Characteristics Noted Across NIDRR Grantees' Websites

Characteristic	Percentage
Forms/Email	86
Navigation Tools	78
Text and Graphics	70
NIDRR Acknowledged	57
Update Notice	51
Text Only	31
Links to NIDRR	24
Links to NIDRR Projects	23
Copyright	21
Disclaimer	19
Search Engine Availability	16
Animation	13
Frames	13
Links with NCDDR	11
Access Icons	10
Audio	4
Interactive Dimensions	4
Video	2
Graphics Only	0

Review of Accessibility

As the use of the webpage moves from being a novelty to being a legitimate tool in the arsenal of dissemination and knowledge utilization practice, the issue of accessibility—the relative "friendliness" of website information for users with disabilities—has become more immediate.

In addition, the extent to which a NIDRR grantee's website serves as an accessibility model for others is a relevant consideration. The NCDDR previously addressed issues of accessibility in *The Research Exchange,* Volume 2, Number 1. The article entitled "General Guidelines for Improving Accessibility of World Wide Web Pages" (NCDDR, 1997b) included a section called "Check your Pages" that discussed the use of a graphical Web-based program called Bobby to assess general accessibility of Web pages.

In its "snapshot" review of NIDRR grantees' websites for accessibility, the NCDDR used Bobby as a standard measure. Application of Bobby results in a ranking of the site by stars. One to four stars are assigned to each URL reviewed. Only sites receiving a four-star rating are allowed to use the Bobby accessibility symbol.

NCDDR staff reviewed websites for accessibility from November 11-20, 1997. Websites that could not be accessed on one day were re-tried the following day. Four websites could not be accessed and were not included in review.

Access Icons

In addition to the "Bobby Approved" icon, the National Center for Accessible Media provides another option for use in describing website accessibility:

From the Center for Applied Special Technology (CAST):

From the CPB/WGBH National Center for Accessible Media (NCAM):

Accessibility Findings

According to Bobby, 65 percent of all NIDRR grantee websites demonstrated less than a "four-star" accessibility rating. Bobby evaluated the accessibility level of NIDRR grantee websites as described in Figure 2.

FIGURE 2
Accessibility Level of NIDRR Grantees' Websites as Evaluated by Bobby

NIDRR Program Area	4 stars	3 stars	2 stars	1 star	Not Included
All Grantees (N=171 websites)	36%	31%	6%	27%	4 Sites

The accessibility levels established by Bobby were distributed among major NIDRR Program areas as described in Figure 3.

FIGURE 3
Accessibility Level Demonstrated by NIDRR Program Areas as Evaluated by Bobby

NIDRR Program Area	4 stars	3 stars	2 stars	1 star	Not Included
ADA Technical Assistance	5	3	1	4	1
Contracts	0	0	0	2	
Fellowships	1	3	0	0	
Field-Initiated Research	5	4	3	13	1
Innovative Research	1	0	0	0	
Model Spinal Cord Injury Projects	3	2	1	6	
Research & Demonstration Projects	5	2	1	1	
Rehabilitation Engineering Research Centers	9	6	0	1	
Research Training Grants	3	1	0	2	
Rehabilitation Research & Training Centers	11	21	0	4	
Sm. Bus. Innovative Research	1	0	2	0	
State Technology Assistance	14	10	1	13	2
Utilization Projects	4	1	1	0	
Total	**62**	**53**	**10**	**46**	**4**

continued on page 4

Common Characteristics of NIDRR Grantees' Websites, *continued*

Conclusions

Information gained from the NCDDR review of NIDRR grantees' websites suggests that considerable commonalities exist among grantee websites. Namely, a majority of grantees with websites: used update notices (51 percent); acknowledged NIDRR (57 percent); used text and graphics (70 percent); included navigational tools (78 percent); and included forms and/or electronic mail feedback options (86 percent). One can debate whether these overall frequencies are as high as may be desired at the current time. At any rate, it is clear that the characteristics of NIDRR grantees' websites are changing. The snapshot of today may not look remotely like the snapshot of tomorrow.

It is of concern that an objective measure of accessibility of websites would suggest that approximately 65 percent of all websites are not as accessible as they could be. Again, while this characteristic is also undoubtedly changing, this characteristic is created by each grantee that has chosen to develop and design their own website. Each grantee is encouraged to apply the graphical web-based program of Bobby to their website in order to begin appraising this characteristic of your website. It does seem reasonable to expect that NIDRR grantees websites should be held to a higher standard reflecting what is desired in every WWW site—the most accessible sites possible for users with disabilities.

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CPB/WGBH National Center for Accessible Media (NCAM). The Web Access Symbol is used to indicate that a Web site is accessible for all users. [Online.] Available: <http://www.boston.com/wgbh/pages/ncam/currentprojects/Iwinner.html>

Trends in Dissemination Patterns of NIDRR Grantees

Researchers who receive funding from the National Institute on Disability and Rehabilitation Research (NIDRR) were asked to report the products of their research to the National Rehabilitation Information Center (NARIC) during Fiscal Years 1993-1996 (FY93-FY96). NARIC presented the information received in the *Compendium of Products of NIDRR Grantees and Contractors* (NIDRR; 1994, 1995, 1996, 1997). The purpose of the *Compendium* is to provide "researchers, rehabilitation professionals, and others in the field of disability with practical information on the spectrum of research, demonstration, training, engineering, and technical assistance materials produced with NIDRR support" (NIDRR, 1995).

The dissemination patterns reflected by the products reported to NARIC and presented in the *Compendium* were first analyzed by the NCDDR in *The Research Exchange,* V1 N3 (NCDDR, 1996). Now, the NCDDR has added data from FY95 and FY96 in order to identify longer-range trends in the types of products produced by NIDRR-funded research and reported to NARIC.

It must be noted that product reporting is not required of grantees, and the format for collecting and reporting these data has changed over the four-year period. This has some impact on the data gathered and presented in the *Compendium* each year. The data sources for this analysis were the printed documents produced by NARIC for each of the four fiscal years studied. The NCDDR analysis provides a picture of the research results that were reported by NIDRR grantees as well as the trends observed, limitations notwithstanding. Comparisons among the NIDRR program areas are presented for information purposes, with no intent to suggest that all program areas should have similar results. Projects with a training focus would be expected to produce more training materials, while research studies would be more likely to produce results reported in journal articles and conference presentations. **Note:** In December, 1997, NARIC made an online electronic version of the *Compendium* available on its Web site, including documents produced from 1994 to the present. See: <http://www.naric.com/naric/search/co/index.html>

One noticeable trend has been a steady decline in the overall percentage of grantees reporting products resulting from their NIDRR grant activity. In FY93, 44 percent (130 of 294 projects) reported products to NARIC. This contrasts with data from the most recent *Compendium* which shows that 83 of approximately 300 projects (28 percent) reported one or more products resulting from their NIDRR grant activity during FY96 (NIDRR, 1997).

In considering whether this response-rate pattern affected the overall number of products reported, the NCDDR analyzed the number of products reported for each program area for FY93-FY96. Although the overall percentage of NIDRR-funded programs that reported products has decreased, the total number of products reported by NIDRR grantees has steadily increased since FY93, when 766 products were reported (NIDRR,

1994). In FY 94, 1,010 products were reported, followed by 1,128 products in FY95 and 1,185 products in FY96 (NIDRR; 1995, 1996, 1997).

The following figures show the decrease in the *percentage of projects* that responded to the request to report products, and the contrasting increase in the *number of products* that were reported. Figure 1 shows the percentage of grantees that reported products for FY93-FY96. Figure 2 shows the number of products that were reported by grantees each year from FY93-FY96:

FIGURE 1
Percentage of NIDRR Grantees that Reported Products for Fiscal Years 1993-1996

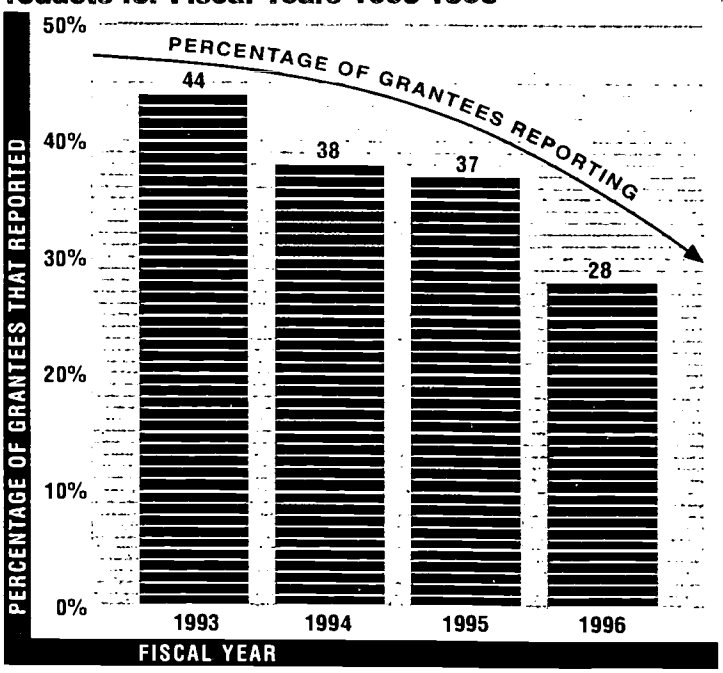
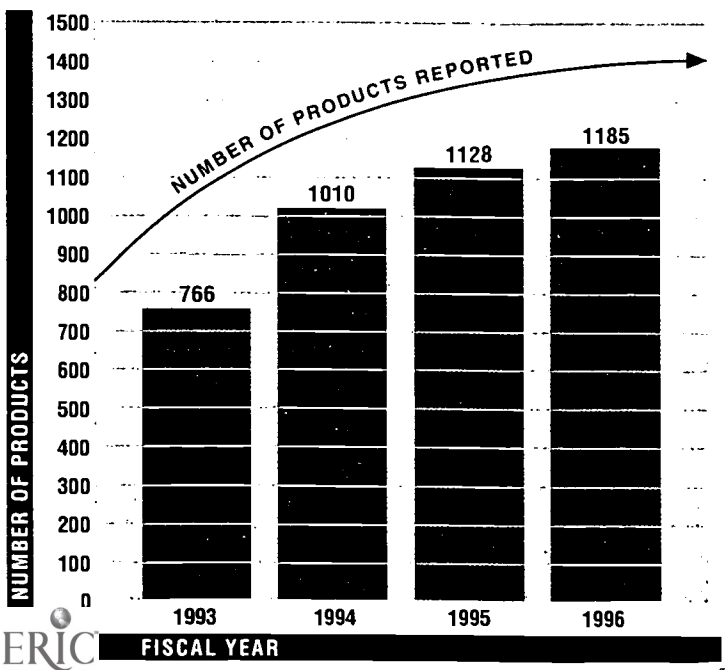


FIGURE 2
Number of Products Reported by NIDRR Grantees for Fiscal Years 1993-1996



Reporting

Differences in reporting by NIDRR program areas also were analyzed. Figure 3 shows the percentage of total grantees in each program area reporting one or more products during FY93 through FY96:

FIGURE 3
Percentage of NIDRR Grantees Reporting Products for Fiscal Years 1993-1996

Program Area	FY93 Percent	FY94 Percent	FY95 Percent	FY 96 Percent
Research & Demonstration Projects	20	26	50	35
Rehabilitation Research & Training Centers	76	71	64	63
Utilization Projects	60	46	37	83
Rehabilitation Engineering Research Centers	60	75	69	69
Fellowships	50	11	0	0
Field-Initiated Research Projects	32	30	23	20
Model Spinal Cord Injury Projects	38	83	44	28
Research Training Grants	14	42	50	13
State Technology Assistance Projects	32	20	32	14
ADA Technical Assistance Projects	33	17	37	18
Other Projects **	31	36	17	0
All Program Areas	44	38	37	28

** Other Projects: Contracts, Innovative Research, Interagency Agreements, Small Business Innovative Research, Technology-Related Programs of National Significance

These data show that only two program areas, Rehabilitation Research and Training Centers (RRTCs) and Rehabilitation Engineering Research Centers (RERCs) had a reporting rate of 50 percent or greater over the four-year period. The Field-Initiated Research projects showed a slight decrease each year in the percent of projects reporting, dropping from 32 percent in FY93 to 20 percent in FY96. One third or less of projects in the State Technology Assistance and ADA Technical Assistance program areas reported products each of the four years. Other program areas showed increases and decreases over the period, with no discernible trends.

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continued on page 6

Trends in Dissemination Patterns of NIDRR Grantees, *continued*

FIGURE 4
Numbers of Products Reported by Grantees for Fiscal Years 1993-1996

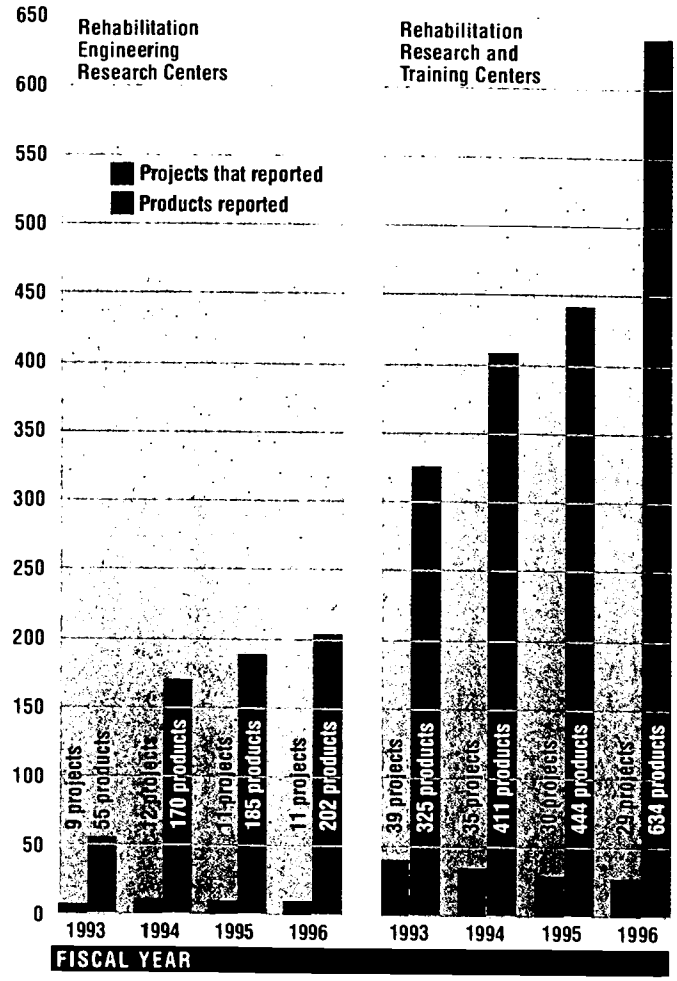
Program Area	FY93* Number	FY94 Number	FY95 Number	FY 96 Number
Research & Demonstration Projects	42	32	60	60
Rehabilitation Research & Training Centers	325	411	444	634
Utilization Projects	52	33	36	47
Rehabilitation Engineering Research Centers	55	170	185	202
Field-Initiated Research Projects	47	91	54	52
Model Spinal Cord Injury Projects	48	90	78	91
Research Training Grants	2	12	53	22
State Technology Assistance Projects	102	115	192	73
ADA Technical Assistance Projects	46	37	21	4
Other Projects **	47	19	5	0
Total Products Reported	**766**	**1,010**	**1,128**	**1,185**

* Data for FY93 have been revised following additional analysis since first reported in *The Research Exchange,* V1, N3 (NCDDR, 1996).

** Other Projects: Contracts, Fellowships, Innovative Research, Interagency Agreements, Small Business Innovative Research, Technology-Related Programs of National Significance

The RERCs and RRTCs, with the highest percentage of projects responding, also demonstrated a substantial increase in the number of products reported from FY93 through FY96. The RERCs reported nearly four times the number of products in FY96 as in FY93, with only a small increase in the overall number of projects reporting throughout the four-year period. The RRTCs reported nearly twice as many products in FY96 as in FY93, despite a slight decrease in the total number of projects that responded to the request for products. Figure 5 shows the total number of RERC and RRTC projects that responded and the total number of products:

FIGURE 5
Comparison of Number of RERC and RRTC Projects that Reported and the Number of Products Reported for Fiscal Years 1993-1996



In addition to evaluating data on the number of projects that reported and number of products, the NCDDR analyzed the variety of products reported by grantees. The products of NIDRR research presented in the *Compendium* for FY93 and FY94 were listed by title, with an abstract in some cases. By grouping these reported products, NCDDR staff identified the following eight broad categories:

- *Journals*—journal articles, special issues of journals
- *Mediated Materials*—audiotape, CD-ROM, database, online Internet pages, software, videotape, electronic library, electronic bulletin board
- *Reports*—including annual reports, final reports, and others
- *General Awareness Materials*—such as abstracts, book reviews, brochures, fact sheets, newsletters
- *Books, Chapters, Papers*—books, chapters in books, concept papers, paper presentations, conference proceedings, working papers
- *Training Materials*—including curricula, handbooks, guidelines, training modules, workbooks, design booklets
- *Miscellaneous or Unclassified Material*—products that could not be identified or that had only one occurrence, such as radio interview, test materials, survey, discussion groups; etc.
- *Aids/Devices*—technological aids, assistive/adaptive devices

The FY95 *Compendium* (NIDRR, 1996) identified specific Document Types including: journal articles, books, book chapters, video and audiotapes, directories, curricula, speeches, conference proceedings, databases, brochures, factsheets, CD-ROMs, software, and Internet resources. For purposes of comparison with the FY93-FY94 data, these Document Types were grouped under the classification system previously developed by the NCDDR. This resulted in far fewer *Miscellaneous or Unclassified* products in FY95 and FY96. A summary of product types reported by grantees is presented in the following figure:

FIGURE 6
Summary of Product Types Reported by NIDRR Grantees for Fiscal years 1993-1996

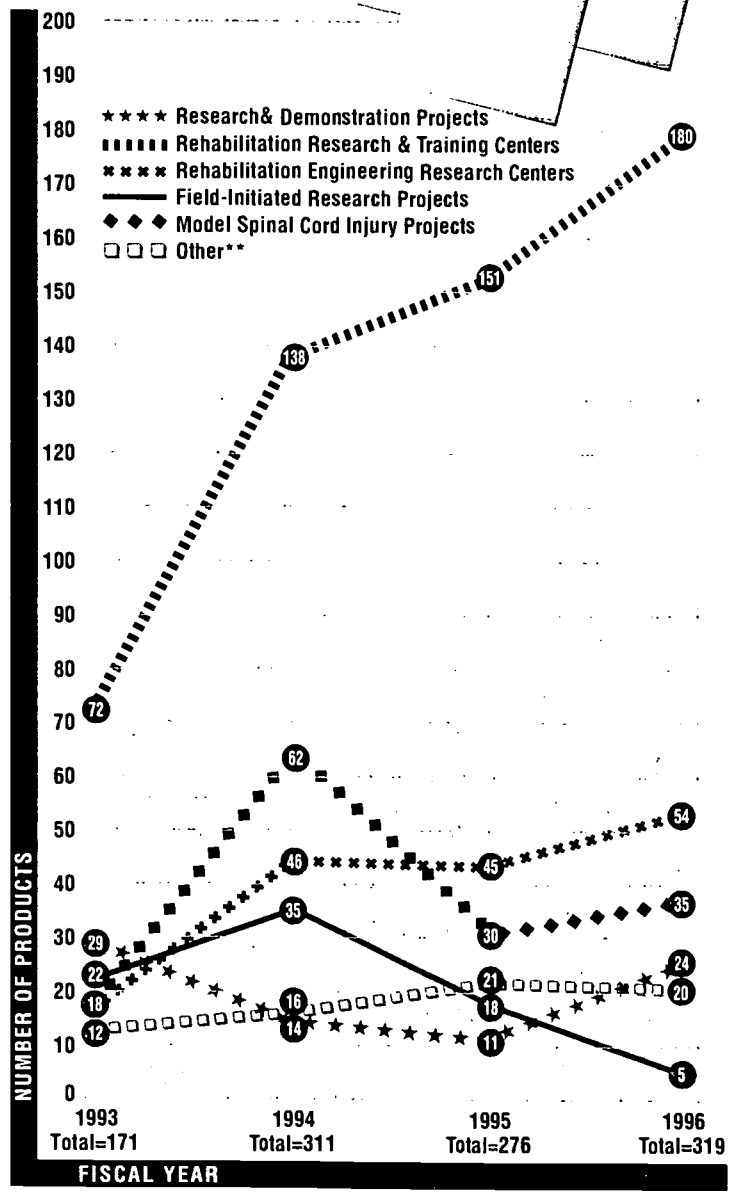
Program Area	FY93 Percent	FY94 Percent	FY95 Percent	FY 96 Percent
Journals	22.3	30.8	24.5	26.7
Mediated Materials	8.4	5.0	11.4	7.8
Reports	7.0	3.7	9.8	6.8
General Awareness	24.3	26.2	21.6	17.9
Books, Chapters, Papers	20.4	21.7	24.0	34.4
Training Materials	4.7	6.3	7.4	4.1
Miscellaneous/Unclassified	12.9	5.8	.05	2.0
Aids/Devices	0	0.4	0.6	.08

In FY93 the three most reported product types (*Journals; General Awareness Materials;* and *Books, Chapters, Papers*) accounted for approximately 67 percent of all products reported. In FY94 and FY96, these same three product types comprised approximately 79 percent of all product reported, and 70 percent of all product types reported for FY95.

The greatest increase between FY93 to FY96 was in the category of *Books, Chapters, Papers,* which exhibited an increase of 160 percent. The *Journals* category grew by 86 percent over the four years. *General Awareness Materials* increased by 15 percent in the same time period. The only category showing a notable decline was *Miscellaneous/Unclassified,* which decreased by 75 percent as a result of modifications in the data collection and reporting process.

The following figures show the numbers of each product type reported by NIDDR Grantees in each program area funded during Fiscal Years 1993-1996:

FIGURE 7
Product Type:
Journals



** Other Projects: Innovative Research, Technology-Related Programs of National Significance, Contracts, Utilization, Research Training Grants, State Technology Assistance Projects, and ADA Technical Assistance Projects

The RRTCs reported the greatest number of products identified as *Journals,* including journal articles and special issues. Although RRTCs made up 30 percent of the total projects reporting, this group accounted for 42 percent of the *Journal* products in FY93. This increased to 56 percent in FY96, when RRTCs made up 35 percent of the total projects reporting. R&D projects, making up five percent of the projects reporting, accounted for 17 percent of *Journal* products in FY93. This dropped to eight percent in FY96 when R&D projects made up eight percent of the reporting projects.

continued on page 8

Mediated Materials were regularly reported by only three program areas: RRTCs, RERCs, and State Technology Assistance projects.

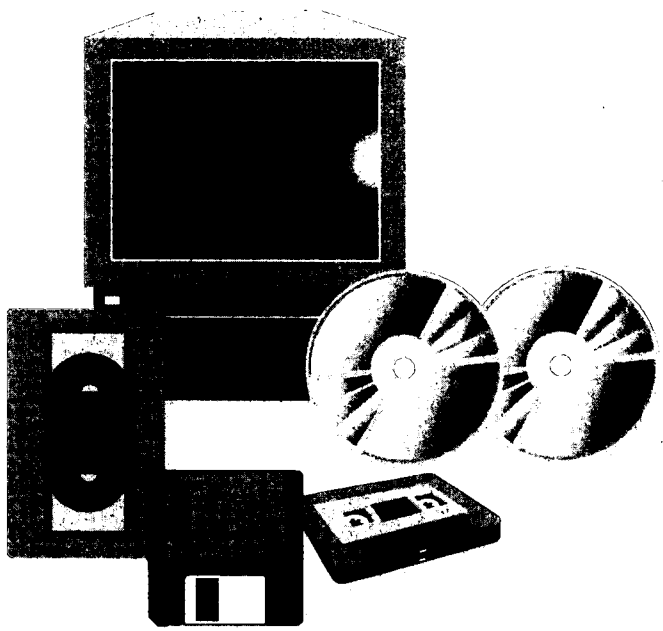
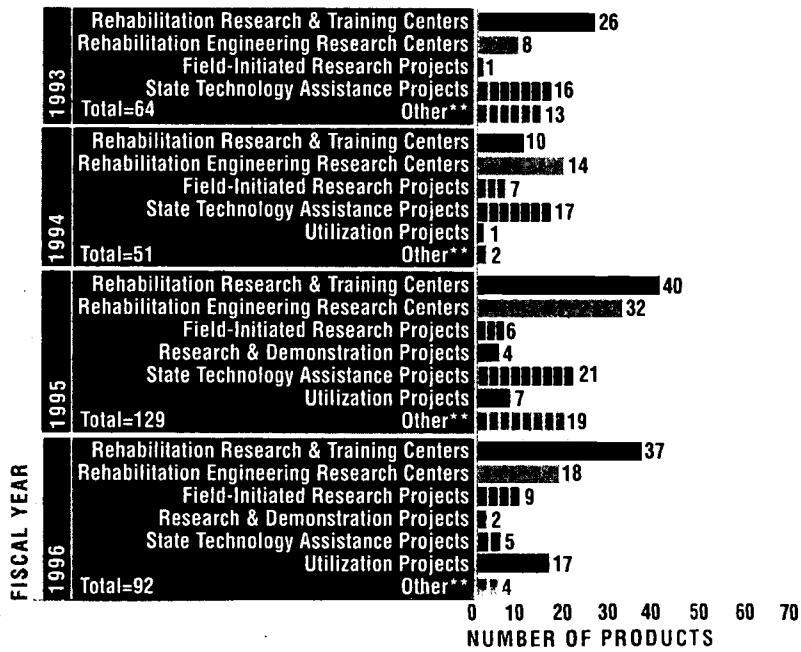


FIGURE 8
Product Type: Mediated Materials



** Other Projects: Fellowships, Model Spinal Cord Injury Projects, Research Training Grants, Small Business Innovative Research, and ADA Technical Assistance Projects

Although it could be assumed that reports would be expected from each project on an annual basis, the product reporting did not support this hypothesis. For FY93, the RRTCs made up 30 percent of projects reporting and accounted for 30 percent of the *Reports*. This increased to 66 percent of *Reports* in FY95, when RRTCs made up 35 percent projects reporting. RERCs made up seven percent of the projects reporting, and accounted for ten percent of the *Reports* in FY93. This changed to six percent of *Reports* in FY96, when RERCs made up 13 percent of projects reporting. Many program areas had no reports during one or more of the four fiscal years.

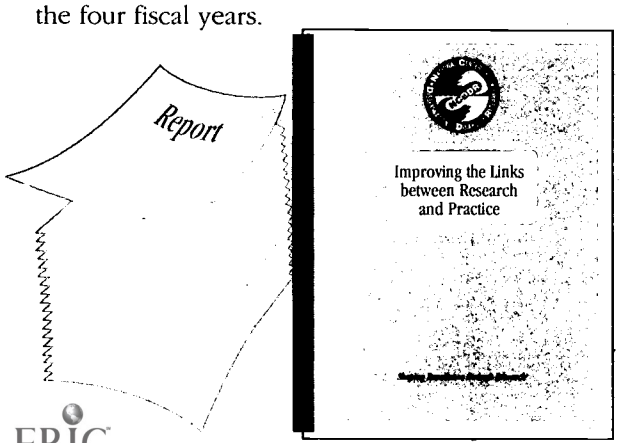
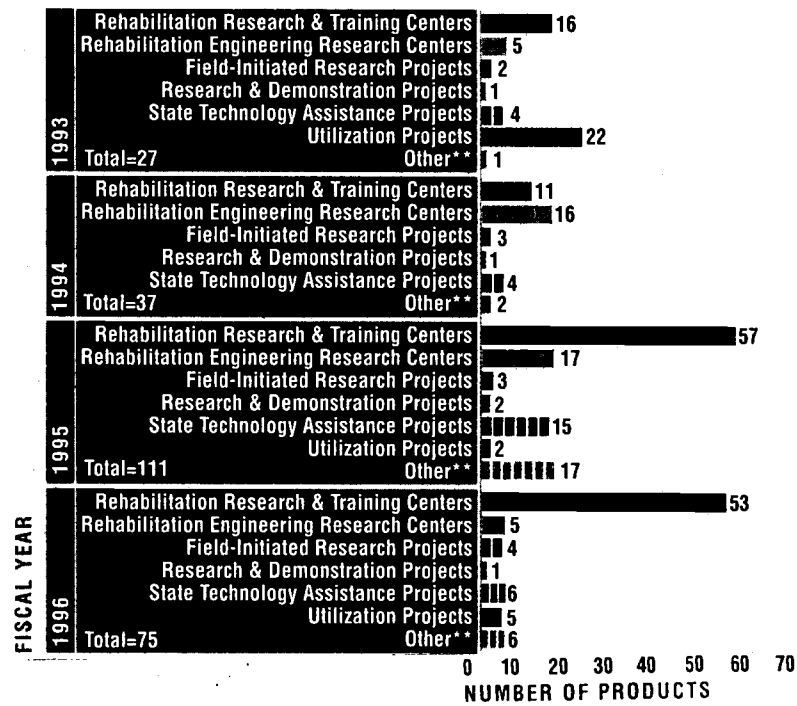


FIGURE 9
Product Type: Reports



** Other Projects: Model Spinal Cord Injury Projects, Research Training Grants, Small Business Innovative Research, and ADA Technical Assistance Projects

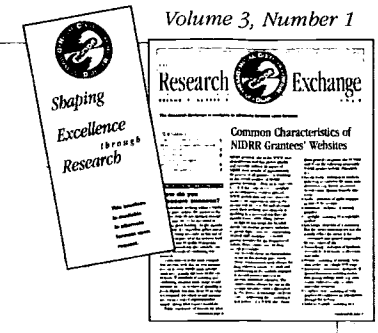
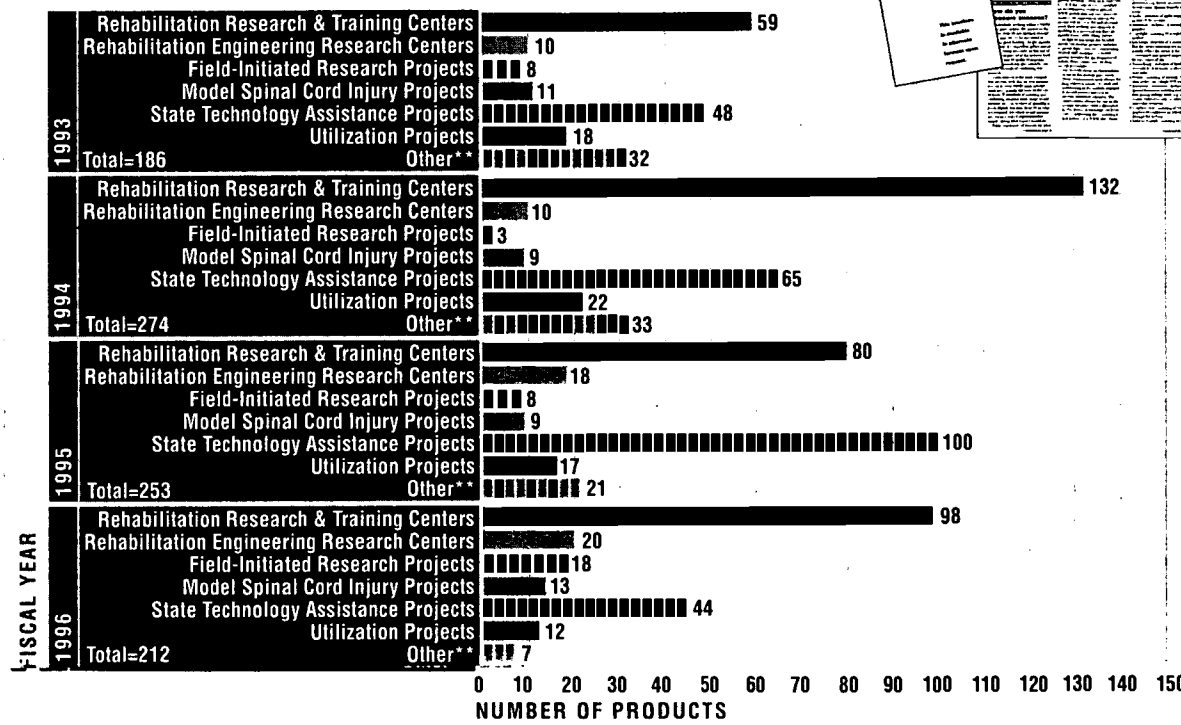


FIGURE 10
Product Type: General Awareness Materials

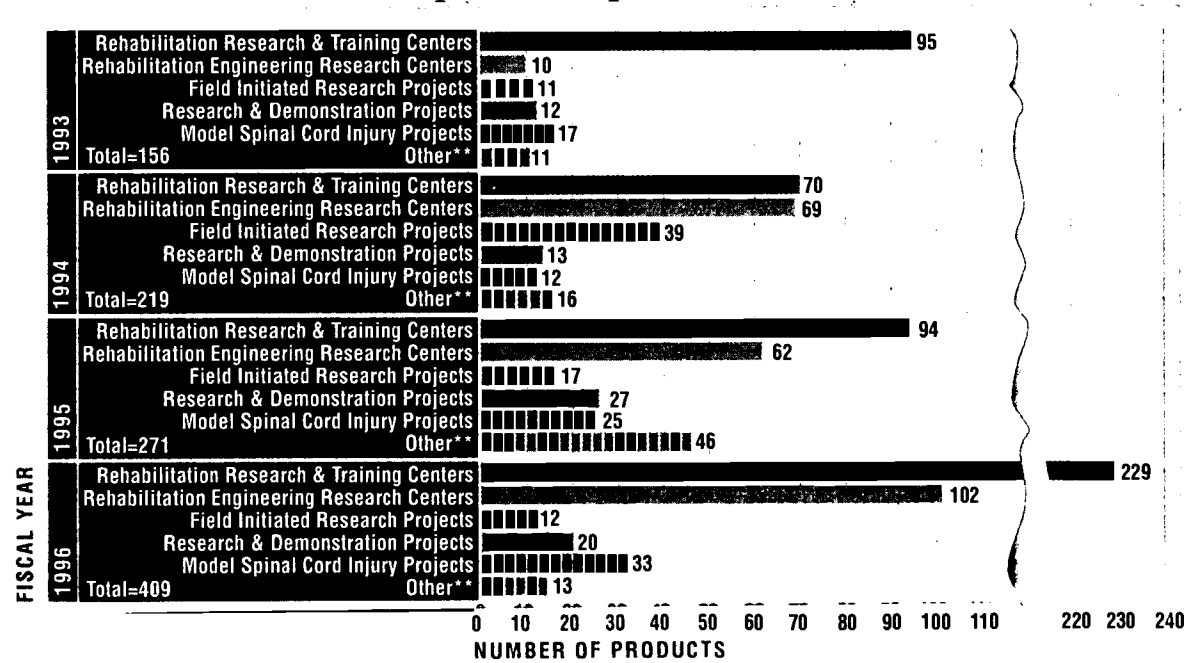
The RRTC program area (30 percent of projects reporting) accounted for 32 percent of the FY93 *General Awareness* product types reported. This increased to 46 percent in FY96, when RRTCs made up 35 percent of projects reporting. The State Technology Assistance group (13 percent of the projects reporting) produced 26 percent of the *General Awareness* products reported in FY93. This group accounted for 21 percent of this product type in FY96 while making up 10 percent of projects reporting.



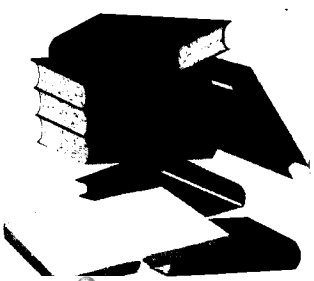
** Other Projects: Innovative Research, Fellowships, Technology-Related Programs of National Significance, Interagency Agreements, International Projects, Contracts, Research Training Grants, ADA Technical Assistance Projects, and Small Business Innovative Research

FIGURE 11
Product Type: Books, Chapters, Papers

The RRTC program area (30 percent of projects reporting) accounted for 61 percent of the FY93 *Books, Chapters, Papers* reported. This decreased to 56 percent in FY96, when RRTCs made up 35 percent of projects reporting.



** Other Projects: ADA Technical Assistance, Fellowships, Innovative Research, Research Training Grants, State Technology Assistance, Technology-Related Programs of National Significance, Utilization Projects



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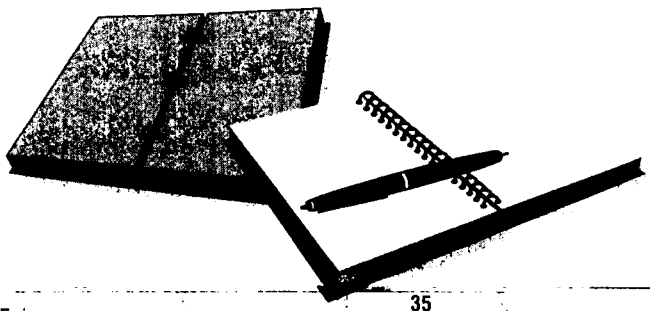
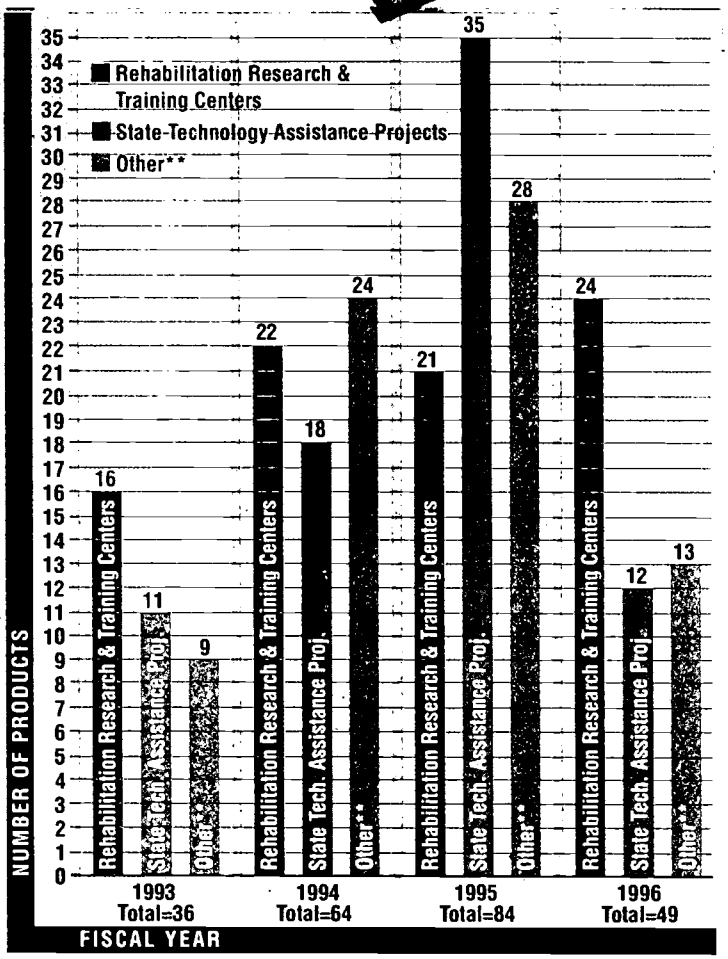
Trends in Dissemination Patterns of NIDRR Grantees, *continued*

FIGURE 12
Product Type: Training Materials

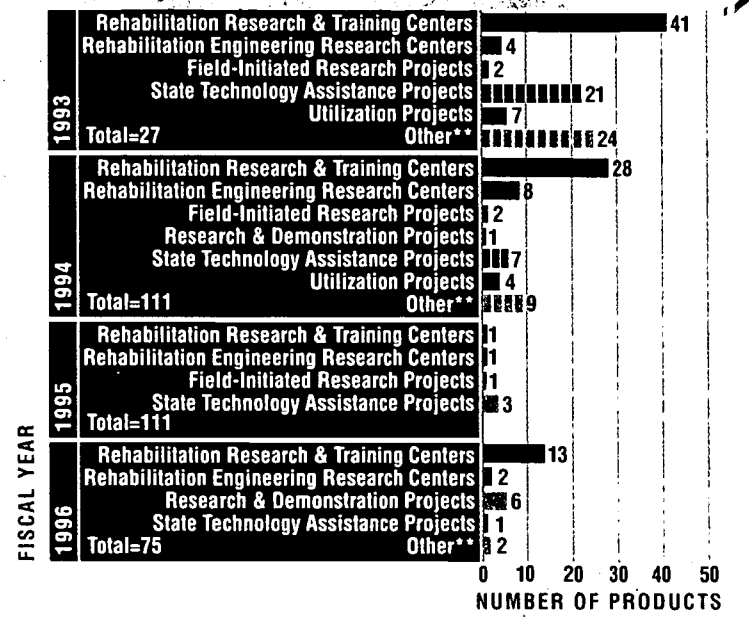




** Other Projects: ADA Technical Assistance, Field-Initiated Research, Model Spinal Cord Injury, Rehabilitation Engineering Research Centers, Research & Demonstration, Research Training Grants, Technology-Related Programs of National Significance, Utilization Projects

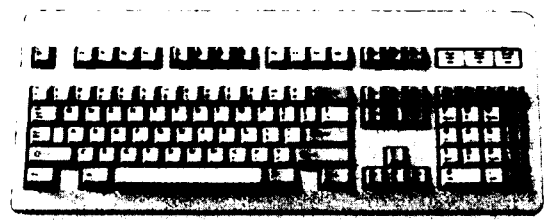
The RRTC program area (30 percent of projects reporting) accounted for 44 percent of the FY93 *Training Materials* product types reported. This increased to 46 percent in FY96, when RRTCs made up 35 percent of projects reporting. The State Technology Assistance group (13 percent of the projects reporting) produced 31 percent of the *Training Materials* products reported in FY93. This group accounted for 25 percent of this product type in FY96 while making up cent of the projects reporting.

FIGURE 13
Product Type: Miscellaneous/Unclassified



** Other Projects: ADA Technical Assistance, Innovative Research, Model Spinal Cord Injury, Research Training Grants

The RRTC program area, which accounted for the majority of products reported over the period, also reported the largest number of *Miscellaneous/Unclassified* products. The total number in this category decreased by 75 percent from FY93 to FY96.



Product Type: Aids/Devices

Aids and devices were rarely reported. R&D projects (one in FY94), RERCs (three in FY94 and six in FY95), Field-Initiated Research (one in FY96) and Small Business Innovative Research (one in FY 95) were the only program areas reporting this product type.

Observations

The data from FY93 established a starting point for describing NIDRR grantees' patterns of dissemination. Data from FY94-FY96 provided an opportunity for the NCDDR to observe trends.

- Less than 40 percent of grantees funded by NIDRR reported a product to NARIC during the fiscal years 1994, 1995 and 1996. FY96 data represented an overall decrease of 36 percent from the percentage of projects that initially reported in FY93.
- The majority of grantees that did report provided information for only one of the four years studied. Only five grantees (less than 2 percent) were funded and reported a product during all four fiscal years. This could be due to a wide variety of reasons such as the timing of the request for information, limited motivation to report, or the lack of completed products to report.
- Variations in the rate of reporting existed across program areas each year, with the rates of participation as low as zero in some areas. The lack of consistency does not promote interpretation of general trends.
- In spite of the decline in projects reporting, the number of products that were reported by grantees increased by 55 percent from FY93 (766 products) to FY96 (1,185 products). This may be due to increased awareness and diligence of the grantees that do report, or an actual increase in completed products.
- The majority of reported products each year were produced by Rehabilitation Research and Training Centers (44 percent over the four-year period). Over the four years, RRTCs made up 30 percent of the total number or projects reporting products to NARIC.
- The greatest increase in product type over the four-year period was *Books, Chapters, Papers,* followed by *Journal* publications. Growth in these areas mark an increase in scientific effort across all NIDRR projects.
- *Mediated Materials* and *Aids/Devices* were mixed, with increases and decreases exhibited during the period observed.
- There is no assurance that all products produced were actually reported to NARIC. It is not possible, from the data presented in the *Compendium,* to report conclusively how many grantees are producing products, and what type of products are being produced.

Conclusions

The limitations described earlier in the data collection process, as well as the great differences among the program areas and the size and resources of NIDRR grantees, must be considered in drawing conclusions from these data. For example, an individual receiving a twelve-month fellowship counts as a NIDRR grantee, as does a large university with multiple research facilities and resources that may have one or more RTCs and/or RERCs. Whether large or small, the results of NIDRR grantee research should be reported and made available for use by others.

The products that have been reported in the *Compendium* succeed in showing the results of NIDRR research, and greater efforts should be expended to make decisionmakers and the public, including people with disabilities, aware of these results. For example, the increased emphasis on publishing journal articles should be examined. The NCDDR is carrying out further analysis to identify journals that publish articles by grantees related to their NIDRR research, and determine which of these are peer-reviewed. This information will be made available in future NCDDR products.

Looking toward the future, it is apparent that the requirements of the Government Performance and Results Act (GPRA) will necessitate reporting from grantees to provide data addressing specific Performance Goals. Evidence of the variety and depth of NIDRR grantees' research results will help to ensure the continuation of support for further research with the purpose of improving the lives of consumers with disabilities.

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National Institute on Disability and Rehabilitation Research (NIDRR). (1994.) *Compendium of products by NIDRR grantees and contractors—1993.* Silver Spring, MD: National Rehabilitation Information Center (NARIC).

NIDRR Grantees and Staff Receive Recognition

The NCDDR congratulates each of the following NIDRR grantees or staff members. All grantees are encouraged to contact the NCDDR with information to share in future issues of *The Research Exchange.*

Researchers from the **Rehabilitation Research and Training Center on Aging with Mental Retardation** <http://www.uic.edu/orgs/rrtcamr/> at the Institute on Disability and Human Development (IDHD), University of Illinois at Chicago, have recently been recognized:

- **Glenn Hedman,** coordinator of the IDHD's Assistive Technology Unit, has been honored with a *Distinguished Service Award* from the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA). In addition, the IDHD's Assistive Technology Unit received the Ameritech and National Council on the Aging *Current Innovator Award* for its work in helping older people, young adults and children increase their independence through the use of communication aids.
- **Ann McCracken,** Ph.D., R.N.C., Principal Investigator for the RRTC, received the *Faculty Research Excellence Award* at the University of Cincinnati College of Nursing and Health.
- **Alison Miller,** Research Associate, received the *Leonard Eron Award* for excellence in research and scholarship given to the top Psychology graduate student at the University of Illinois at Chicago.
- **Tia Nelis,** Self-Advocacy Specialist, received five honors. During 1996, she was awarded the President's Committee on Mental Retardation *Elizabeth Boggs Award on Leadership and Self-Advocacy,* The American Association of University Affiliated Programs' (AAUAP) *Leadership and Self-Advocacy Award,* and was named the *Self-Advocate of the Year* by People First of Illinois. Ms. Nelis was also elected chair of the national self-advocacy movement for persons with developmental disabilities, Self-Advocates Becoming Empowered (SABE), and President of the Illinois People First Chapter.
- **Harvey L. Sterns,** Ph.D., director of the Institute for Life-Span Development at the University of Akron and a Principal Investigator for the RRTC, received the 1996 *Distinguished Service Award in Education, Research and Communication,* from the Association of Ohio Philanthropic Homes and Housing for the Aging and received the 1996 *Dr. Arnold L. Heller Memorial Award for Contribution to the Field of Gerontology,* Menorah Park Center for the Aging, Cleveland, Ohio.

For more information, contact **Dr. Tamar Heller,** ...or of the RRTC on Aging with Mental Retardation, ...2) 413-1537 or via e-mail: **THeller@uic.edu**

The **Research and Training Center on Rural Rehabilitation Services** <http://ruralinstitute.umt.edu/> at the University of Montana's Rural Institute on Disabilities has received a special *Citation from the Governor of the State of Montana.* The Citation was awarded to the RTC on September 1, 1996 "in appreciation of its efforts to support full participation in community life for people with disabilities, through research and training."

For more information, contact **Dr. Tom Seekins,** Principal Investigator, at **(406) 243-5467.**

How To Contact The National Center For The Dissemination Of Disability Research

Call Us
1-800-266-1832 or 512-476-6861 V/TT
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Errata
The Research Exchange

Volume 3, Number 1, 1998

Please substitute the following figures for those printed in Volume 3, Number 1 of *The Research Exchange.*

Reporting

Found on page 5

FIGURE 3
Percentage of NIDRR Grantees Reporting Products for Fiscal Years 1993-1996

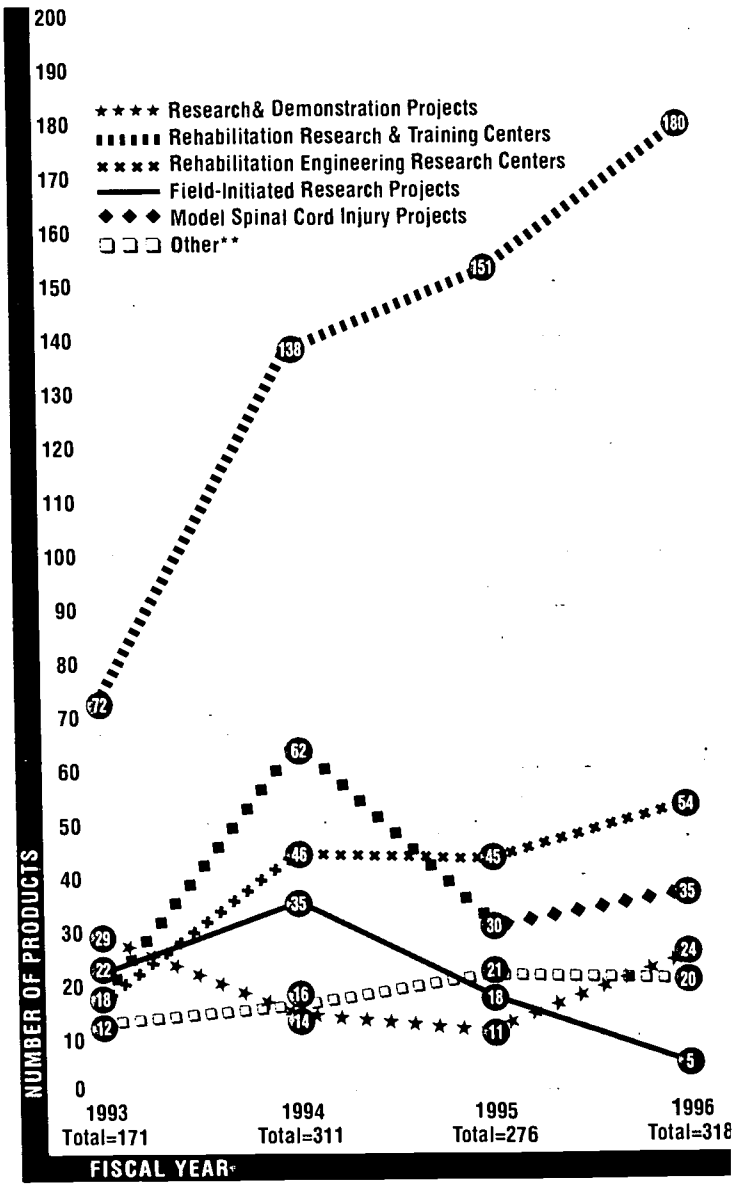
Program Area	FY93 Percent	FY94 Percent	FY95 Percent	FY 96 Percent
Research & Demonstration Projects	28	26	50	35
Rehabilitation Research & Training Centers	76	71	64	63
Utilization Projects	60	46	38	83
Rehabilitation Engineering Research Centers	60	75	69	69
Fellowships	50	11	0	0
Field-Initiated Research Projects	32	30	23	20
Model Spinal Cord Injury Projects	38	83	44	28
Research Training Grants	14	42	50	13
State Technology Assistance Projects	32	20	32	14
ADA Technical Assistance Projects	33	17	37	18
Other Projects **	21	17	14	0
All Program Areas	**44**	**38**	**37**	**28**

** Other Projects: Contracts, Innovative Research, Interagency Agreements, Small Business Innovative Research, Technology-Related Programs of National Significance

Rev. 4/98

FIGURE 7
Product Type: Journals

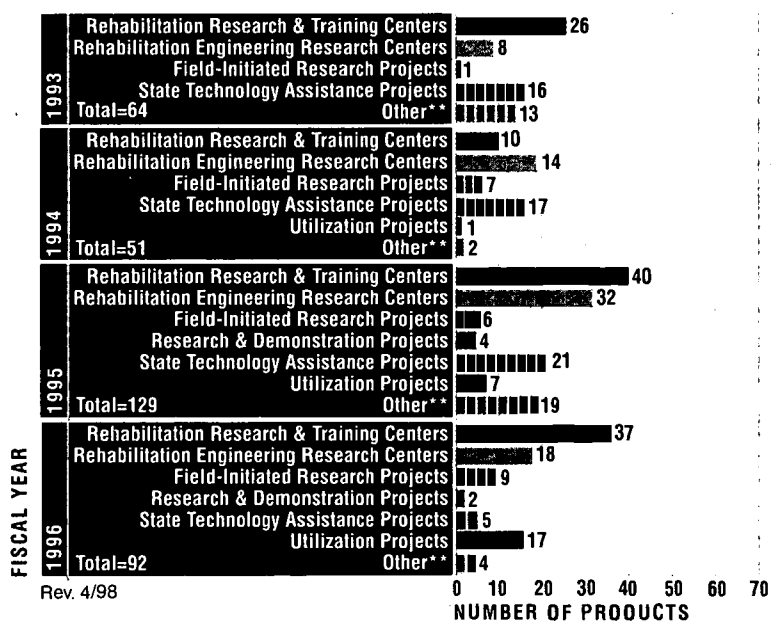
Found on page 7



** Other Projects: Innovative Research, Technology-Related Programs of National Significance, Contracts, Utilization, Research Training Grants, State Technology Assistance Projects, and ADA Technical Assistance Projects

FIGURE 8
Product Type: Mediated Materials

Found on page 8

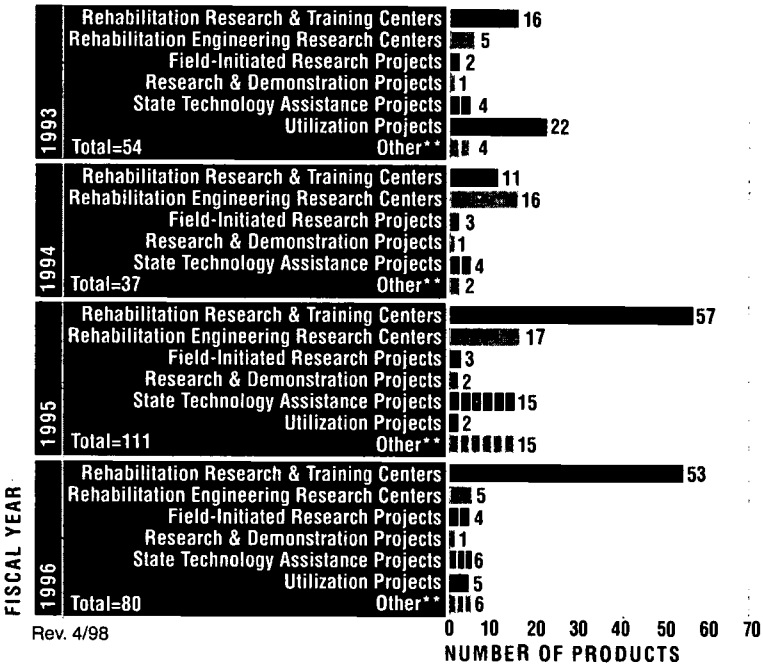


Rev. 4/98

** Other Projects: Interagency Agreements, Model Spinal Cord Injury Projects, Research Training Grants, Small Business Innovative Research, and ADA Technical Assistance Projects

FIGURE 9
Product Type: Reports

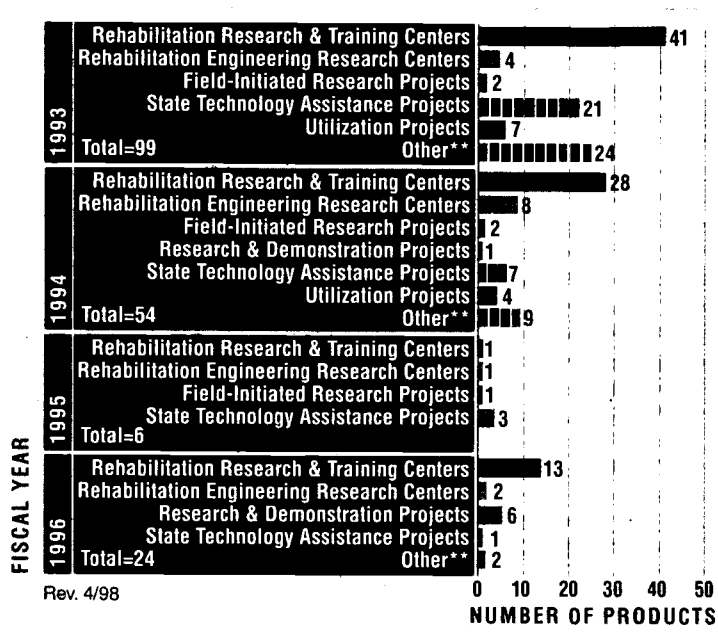
Found on page 8



** Other Projects: Fellowships, Model Spinal Cord Injury Projects, Research Training Grants, Small Business Innovative Research, and ADA Technical Assistance Projects

Found on page 10

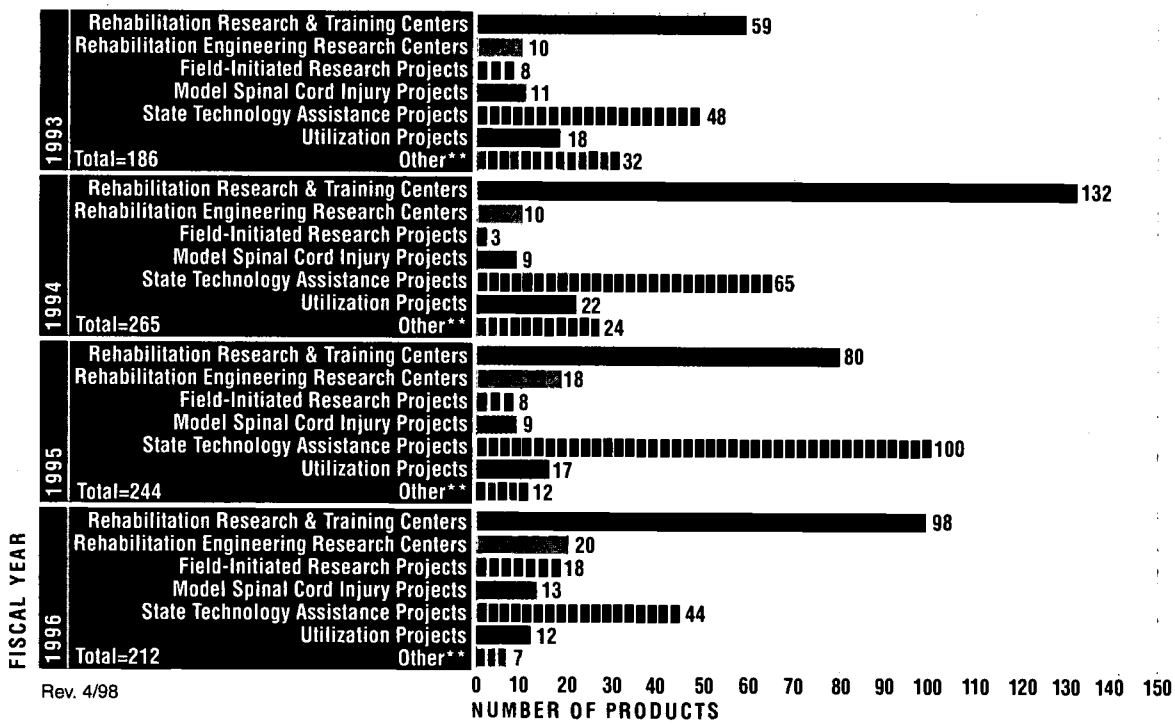
FIGURE 13
Product Type: Miscellaneous/Unclassified



** Other Projects: ADA Technical Assistance, Innovative Research, Model Spinal Cord Injury, Research Training Grants

FIGURE 10
Product Type: General Awareness Materials

Found on page 9



** Other Projects: Innovative Research, Fellowships, Research and Demonstration, Research Training Grants, ADA Technical Assistance Projects

THE

Research Exchange

VOLUME 3, NUMBER 2 1998

***The Research Exchange* is available in alternate formats upon request.**

At a Glance

A WORD FROM THE DIRECTOR

Surveying for Dissemination Characteristics

Frequently, dissemination plans are created in the heat of a proposal development process. These plans are often based in what a particular applicant may have done in the past or consider to be their "strength" in disseminating the outcomes of their grant activity. In other cases, an applicant may include what is perceived to be the newest "cutting edge" strategy that will give his/her proposal a competitive edge over all others.

Less frequently, dissemination plans are developed based upon the characteristics of a project's intended audience(s). In many cases, applicants may not describe or be familiar with the dissemination-related characteristics of their intended target audiences addressed in the dissemination plan.

Frequently, dissemination plans developed in the proposal process are based upon a particular type of document format. For example, it is not

continued on page 2

How Do Stakeholders Find and Disseminate Information?

During the spring of 1997, NCDDR conducted phase 1 of a nationwide survey. Respondents included 1,238 individuals with disabilities (consumers) who participated in services of independent living centers and other independent living organizations (NCDDR, 1997). Phase 2 of the survey was conducted with stakeholder groups in fall, 1997 and spring, 1998. Later in 1998, phase 3 of the survey will focus on dissemination practices of researchers who receive funds through the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education, Office of Special Education and Rehabilitative Services (OSERS).

For the purposes of the phase 2 survey activity, stakeholder groups are defined as non-NIDRR grantee organizations that provide services or information to people with disabilities and their families. Four categories of stakeholders were surveyed to determine the following: Is disability research useful to stakeholders? If it is, where and how do stakeholders find such information? How do stakeholders disseminate information to their consumers? Are there differences among stakeholder groups in the way they answer these questions?

Who are Stakeholders?

The Americans with Disabilities Act (ADA) of 1990 (Public Law 101-336, 104 Stat. 327) estimated that there are 43 million people with disabilities in the United States. The ADA definition of individuals with disabilities includes anyone who has "a physical or mental impairment that substantially limits one or more of the individual's major life activities; a record of this impairment; or is regarded as having this impairment" (Authority: Section 7(8)(B); 29 U.S.C. 706(8)(B)). With the large number and variety of people with disabilities, a vast number of organizations work with consumers with disabilities, and it would not be feasible in phase 2 to survey each one.

For the purposes of this phase 2 survey, four broad categories of stakeholders were identified as participants to ensure that a wide variety of perspectives were represented: rehabilitation researchers (excluding those funded through NIDRR, who will be surveyed in phase 3), service providers, supporters, and policymakers/information sources. Across these four broad categories, representatives of eight groups were sampled. These groups vary in their purpose and size, and are not strictly comparable with each other.

continued on page 2

A WORD FROM THE DIRECTOR

continued from page 1

uncommon for applicants to propose to develop a certain number of articles for journal publication, or to develop a summary report of their findings, or to conduct a training session. The problem with this type of dissemination planning is that it is not based upon what is known about conducting effective dissemination (NCDDR, 1996). Effective dissemination plans need to be based upon an integrated understanding of the relationship of:

1. the intended user,
2. the content of the message,
3. the source from which the message will come, and
4. the medium that will be used to transfer the message.

The NCDDR staff have conducted surveys to help inform NIDRR grantees of the dissemination characteristics of a variety of audiences. This issue of *The Research Exchange* addresses stakeholder groups of non-NIDRR grantees that disseminate information to people with disabilities. The value in surveying this diverse audience rests in the fact that some NIDRR grantees cite these stakeholders as their intended dissemination target audience(s). A clearer understanding of the characteristics of this audience should facilitate more effective dissemination strategies to address their needs.

It never has been the case that effective dissemination includes the notion of "one size fits all." There is an indication that the target audiences of dissemination activities and, hopefully, the beneficiaries through their utilization of the disseminated information, do have variable characteristics. Yet, many times, dissemination plans treat their intended audiences as if there were no significant differences among them. This issue highlights the results of the latest NCDDR survey of stakeholders and past survey of consumers (see *The Research Exchange,* Volume 2, Number 4). We hope this information can help to inform applicants and grantees in the development or refinement of dissemination plans.

John D. Westbrook, Ph.D.
Director, NCDDR

How Do Stakeholders Find and Disseminate Information?

continued from page 1

However, it is of interest to examine the data for similarities and differences among the groups. The survey results are presented both in aggregate form and by individual stakeholder group. The four broad categories, the groups within each category, and the sampling procedures are described in the following section.

The Research Exchange, a newsletter to promote the effective dissemination and utilization of disability research outcomes, is published quarterly by the National Center for the Dissemination of Disability Research (NCDDR) which is operated by the Southwest Educational Development Laboratory (SEDL). Neither SEDL nor the NCDDR discriminate on the basis of age, sex, race, color, creed, religion, national origin, sexual orientation, marital or veteran status, or the presence of a disability. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities for all individuals in all employment matters. The contents of this newsletter were developed under a grant (#H133D50016) of $608,100 from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education (ED). However, these contents do not necessarily represent the policy of SEDL, NIDRR, or the ED; do not assume endorsement by the Federal Government.

An electronic version of *The Research Exchange*, Vol. 3, No. 2 is available on the Internet at URL

<http://www.ncddr.org/researchexchange/>

***The Research Exchange* is available in alternate formats upon request.**

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Stakeholder Groups and Sampling Procedures

Rehabilitation Researchers were represented by a sample of the membership of the Rehabilitative Engineering and Assistive Technology Society of North America (RESNA). Many **RESNA members** conduct research in areas related to disability, rehabilitation, and special education. A random selection process was used to identify a sample from the 1996 RESNA membership list of approximately 2,000 names. The sample was obtained by using a random numbers table to choose a beginning point on the membership list and then selecting every twentieth member. Many of the members of RESNA were also NIDRR grantees who may participate in phase 3 of our study, and were excluded from this sample. The final RESNA sample included 82 individuals who represented about five percent of the eligible RESNA membership.

Service Providers include two stakeholder groups that provide direct services to people with disabilities and their families. The first is administrators of **independent living organizations,** including Title VII-funded Part C Centers for Independent Living (CILs), Statewide Independent Living Councils (SILCs), and other independent living programs. Administrators from all the groups listed in the Independent Living Research Utilization (ILRU) *Directory of Independent Living Centers and Related Organizations, Vol. 18, January 1996,* excluding those located outside the 50 United States and the District of Columbia, were contacted by telephone and asked to participate. Contact was made with a total of 385 organizations, and 380 administrators volunteered to participate. Responses were collected from this sample to coincide with the sampling of consumers of independent living organizations during phase 1.

The second group included in the service provider category is health care providers, represented by administrators of acute and post-acute **medical rehabilitation facilities.** A random sample of 169 rehabilitation facilities was drawn

from a listing in *The Complete Directory for People with Disabilities* (1996). The listing included 1,338 facilities. The sample was obtained using a random numbers table to choose a beginning point on the membership list and then selecting every eighth entry. Surveys were sent to administrators of 57 acute and 112 post-acute facilities.

The NCDDR planned to sample directors of state vocational rehabilitation agencies as part of the service provider category in the phase 2 stakeholder survey. Approval was not granted through the Council of State Administrators of Vocational Rehabilitation (CSAVR) to administer the survey and, therefore, state vocational rehabilitation agencies are not represented among the stakeholder groups.

Supporters include organizations that advocate for and assist consumers with disabilities. Supporters were represented by **Client Assistance Programs** (CAPs) and **Advocacy and Protection Agencies** (APAs) located throughout the country. Telephone calls were made to the administrators of CAPs and APAs to describe the study and ask for volunteers to participate in the survey. In some states, the CAP and APA were operated by the same agency, and only one was asked to participate in the survey. Questionnaires were sent to a total of 32 CAPS and 48 APAs.

Policymakers/Information Sources are stakeholders that affect the lives of people with disabilities and their families through making and implementing policy, and through sharing information about people with disabilities and about research outcomes. Four different groups were included for sampling in this category:

1. **State Directors of Special Education**
   A list of all State Directors was obtained from the National Association of State Directors of Special Education (NASDSE). The sample population included the directors of special education in the 50 United States, plus the District of Columbia, Department of Defense Dependents Schools, and the Bureau of Indian Affairs (BIA) Schools. The state directors were contacted by telephone and invited to participate. Questionnaires were sent to 51 of the 53 directors (vacancies were found at the BIA and Hawaii State Department of Education). A total of 46 state directors volunteered to participate; six were not contacted directly after multiple attempts. Follow-up was conducted by telephone and by mail to those directors who did not respond by the date specified in the contact letter.

2. **Legislators and Aides**
   Federal legislators who served as members of the Senate Committee on Labor and Human Resources and the House Committee on Education and the Workforce were identified using the *Congressional Yellow Book* directory (1997). All members of the Senate Committee, and one Representative from each participating state on the House Committee, were contacted through telephone calls to their aides. Messages were left giving an overview and inviting participation in the survey when direct conversations were not possible. The survey was sent to 78 federal legislators and aides.

   The *State Yellow Book* (1997) was used to identify state legislators who served as Chairs/Vice-chairs of Health and Education committees or subcommittees. The survey was sent to 194 state legislators. This yielded a total of 272 federal and state legislators and aides.

3. **Committees on Employment of People with Disabilities**
   Questionnaires were sent to 559 officers or other members of state and local Committees. These included Governor's Committees on Employment of People with Disabilities or other state-wide committees (49), Mayor's Committee on Employment of People with Disabilities (218), local ADA Committees (202), and other local groups similar to Mayor's Committees (90). The contacts for the Mayor's and other local committees were obtained through telephone calls to the Governor's committee in each state. The designated representatives of two Governor's Committees had already responded to the survey representing a different stakeholder group, so a second response was not requested.

4. **Disability Media**
   This sample was identified from *America's Telability Media* (Winston, 1995) with additional entries from *The Complete Directory for People with Disabilities* (1996). Surveys were sent to 201 representatives of the disability media, which included journals, magazines, newspapers, radio, and television.

Sampling procedures varied among stakeholder groups and were dependent on the total number of the group population or the clarity of the group definition. In some cases, the stakeholder group was small (e.g., State Directors of Special Education) and it was possible to send surveys to all the representatives in this group. In other cases, the number was large and a random sample was selected (e.g., members of RESNA), or the parameters of the group were not clearly defined (e.g., Disability Media representatives) and a convenience sample was used from available lists of contacts.

In summary, eight stakeholder groups were surveyed within the four general categories of phase 2. The acronym in parentheses following each stakeholder group represents the group identification in the subsequent tables and graphs in the Results section.

1. Members of RESNA (RESNA)
2. Administrators of Independent Living Organizations (IL)
3. Administrators of Medical Rehabilitation Facilities (RF)
4. Directors of Client Assistance Programs/Advocacy and Protection Agencies (CAP/APA)
5. State Directors of Special Education (SDSE)
6. Federal and State Legislators/Aides (LEG)
7. Members of Committees on Employment of People with Disabilities (CEPD)
8. Disability Media Representatives (MEDIA)

Survey Procedures

Several stakeholder groups were contacted by telephone to determine their willingness to participate in the survey, prior to receiving the survey materials. A cover letter with a brief description of the purpose of the survey, instructions, and a survey questionnaire were mailed to representatives of the eight stakeholder groups selected to participate in the survey. The instrument was similar to the questionnaire field-tested and used in phase 1 of the study. The survey questions were modified to reflect each stakeholder group and a sixth question was added. These six questions were designed to obtain baseline data concerning stakeholder preferences in obtaining information, as well as how they disseminate information to their consumers. The survey questions are presented below.

Administrator Survey

1. How does your organization **usually** get information that you use? *(Check all that apply. Some examples are given for each answer. Space is provided if you would like to include specific examples.)*
   - ❑ Popular media (television, radio, movies, videos, etc.): _____
   - ❑ Print media (books, magazines, newspapers, pamphlets, brochures, etc.): _____
   - ❑ Non-print media (Braille, audio tapes, readers, etc.): _____
   - ❑ Professional people (doctors, lawyers, teachers, caseworkers, etc.): _____
   - ❑ Other people (parents, family, friends, co-workers, etc.): _____
   - ❑ Groups (meetings, workshops, classes, conferences, etc.): _____
   - ❑ Computer (electronic mail, Internet, etc.): _____
   - ❑ Other (Brief description): _____

2. What ways does your organization **like** to get information? *(Check all that apply)*
   - ❑ Regular print
   - ❑ Large print
   - ❑ Braille
   - ❑ Audio tape
   - ❑ Video tape
   - ❑ CD-ROM
   - ❑ Computer (file/disk)
   - ❑ Computer (online)
   - ❑ Non-English language: ❑Spanish ❑Other: _____
   - ❑ Other (Brief description): _____

3. Does your organization ever get information from the **Internet**? *(Please check one best answer.)*
   - ❑ Very often
   - ❑ Often
   - ❑ Only once or twice
   - ❑ Never
   - ❑ Don't know

4. Is information from disability research useful to your organization? *(Please check one best answer.)*
   - ❑ Yes
   - ❑ No
   - ❑ Don't know

5. Does your organization have a way to find information from disability research? *(Please check one best answer.)*
   - ❑ Yes
   - ❑ No
   - ❑ Don't know

6. How does your organization usually **get information to** your consumers? *(Check all that apply.)*
   - ❑ Personal communication
   - ❑ Newsletters
   - ❑ Information mail outs
   - ❑ Meetings
   - ❑ Electronic mail
   - ❑ Computer online (Internet, World Wide Web)
   - ❑ Telephone/information line
   - ❑ Fax
   - ❑ Training sessions/classes/workshops
   - ❑ Library/information holdings
   - ❑ Reports
   - ❑ Other (please describe): _____

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Following the sample selection, survey materials were mailed and participants were asked to respond within two weeks. Forms were initially coded to facilitate follow-up. If responses were not received within two weeks of the mailing of materials, follow-up contacts were made by telephone and/or by mail.

Response Rate

A total of 1,789 surveys were sent and 851 completed surveys were returned, for an overall response rate of 48 percent. Table 1 presents the number of surveys sent to each stakeholder group, the number responding and the response rate for each group. The table is rank-ordered according to the response rate. First, the overall stakeholders' response rate is presented, followed by the individual groups in descending order.

As Table 1 illustrates, the State Directors of Special Education (SDSE) had the highest response rate (96 percent). Forty-nine out of 51 surveys were returned for this stakeholder group. Client Assistance Programs/Advocacy and Protection Agencies (CAP/APA) had the second highest response rate of 80 percent. Twenty-eight of the 32 surveys sent to CAPs were returned (response rate of 88 percent) and thirty-six of the 48 APAs responded (response rate of 75 percent). Of the 380 surveys sent to administrators of independent living organizations (IL), 267, or 70 percent, were completed and returned. Participants from these three groups received follow-up telephone calls and letters if responses were not sent within two weeks.

Responses were received from 112 of the 201 disability media representatives for a response rate of 56 percent. Administrators of rehabilitation facilities (RF) had the next highest response rate with almost half (49 percent) responding. Eighty-two of 169 surveys were completed and returned. Of the 82 surveys sent to members of RESNA, five were returned as undeliverable and these were not used in the calculation of the response rate. Twenty-eight of the remaining 77 members included in the sample of RESNA returned completed surveys for a response rate of 36 percent. The two stakeholder groups with the lowest response rates were the Committees on Employment of People with Disabilities (CEPD) and the Legislators/Aides (LEG). These two groups had response rates of 32 percent and 25 percent, respectively. Participants from these groups received follow-up letters if responses were not received within two weeks after the survey materials were sent.

TABLE 1
Response Rate by Stakeholder Group (Ranked)

Stakeholder Group	Number Sent	Returned	Response Rate
All Stakeholders	1,789	851	48%
SDSE	51	49	96%
CAP/APA	80	64	80%
IL	380	267	70%
MEDIA	201	112	56%
RF	169	82	49%
RESNA	77	28	36%
CEPD	559	180	32%
LEG	272	69	25%

Key

Key to Acronyms used in the tables and figures on pages 5 through 9

Rehabilitation Researchers:

RESNA=Members of the Rehabilitative Engineering and Assistive Technology Society of North America

Service Providers:

IL=Administrators of Independent Living Organizations

RF=Administrators of Medical Rehabilitation Facilities

Supporters:

CAP/APA=Directors of Client Assistance Programs/Advocacy and Protection Agencies

Policymakers/Information Sources:

SDSE=State Directors of Special Education

LEG=Federal and State Legislators/Aides

CEPD=Members of Committees on Employment of People with Disabilities

MEDIA=Disability Media Representatives

Results

Responses to questions one, two, and six are presented in the following tables, and responses to questions three, four, and five are presented in figures on pages six through eight. Each table or figure presents overall responses for stakeholder groups in aggregate form, followed by responses for individual stakeholder groups. The tables are organized with response choices listed in columns and the stakeholder groups listed in rows. In addition, the responses chosen most frequently by all stakeholders are in the first column, followed by the second, third, and so on, regardless of the order in which the response choice appeared on the survey. The stakeholder groups are listed according to their overall rate of response as presented in Table 1. The number in each cell gives the percent of respondents that selected a particular response.

Question One

How does your organization usually get information that you use?

Responses among the stakeholder groups to this question were similar, although there were some variations in the percentage of respondents using a particular source to get information. Overall, the stakeholders chose 'Print Media,' including books, magazines, newspapers, pamphlets, and brochures, most frequently.

Examining the stakeholder groups individually, all but Rehabilitation Facilities (RF) and Legislators/Aides (LEG) also chose this as the most frequent response. The range of percentages for this information source was 75 to 97 percent. The least frequent response for most groups was 'Non-Print Media' (Braille, audio tapes, readers) with a range of 3 to 33 percent. The State Directors of Special Education (SDSE) had a higher percentage of participants identifying a wide variety of sources to obtain information, while Legislators/Aides (LEG) reported using few of the information sources. The most frequent response for Legislators/Aides was 'Professionals.'

Question Two

What ways does your organization like to get information?

Stakeholder groups responded similarly to this question. As Table 3 illustrates, 'Regular Print' was the most frequent response when all stakeholder groups were combined and when each individual group was examined separately. Computer online (53 percent) and computer files and disks (49 percent) followed this response. The least frequent responses were 'Braille' (18 percent) and 'Non-English Language' (14 percent). Of those stakeholders who chose 'Non-English Language', 85 percent indicated that the language was Spanish. Examining the stakeholder groups individually, the SDSE and IL respondents preferred a greater variety of formats, while LEG identified fewer of the information formats.

See Table 3 at right.

TABLE 2

Question One: **How does your organization usually get information that you use?**

Stakeholder Group	Print Media	Groups	Professional People	Other People	Computer	Popular Media	Non-Print Media	Other
All Stakeholders	90	82	76	64	62	48	21	16
SDSE	96	90	82	76	94	39	33	29
CAP/APA	97	91	77	72	77	47	19	22
IL	95	93	76	76	70	60	32	12
MEDIA	87	61	70	52	71	38	21	29
RF	88	89	88	65	61	43	16	11
RESNA	86	75	86	54	61	29	7	7
CEPD	87	78	68	51	41	52	16	12
LEG	75	71	87	59	39	33	3	22

TABLE 3

Question Two: **What ways does your organization like to get information?**

Stakeholder Group	Regular Print	Computer Online	Computer Files	Video Tape	Large Print	Audio Tape	CD-ROM	Braille	Non-English	Other
All Stakeholders	93	53	49	37	27	27	25	18	14	5
SDSE	98	90	57	55	14	29	55	10	20	6
CAP/APA	100	67	56	23	14	22	42	11	19	6
IL	94	56	62	49	48	44	29	35	24	3
MEDIA	92	63	61	23	17	14	20	13	3	9
RF	95	45	44	46	24	26	27	7	18	5
RESNA	93	64	32	39	7	7	29	4	7	7
CEPD	91	35	31	33	22	19	12	14	5	4
LEG	86	35	26	16	3	14	7	0	0	9

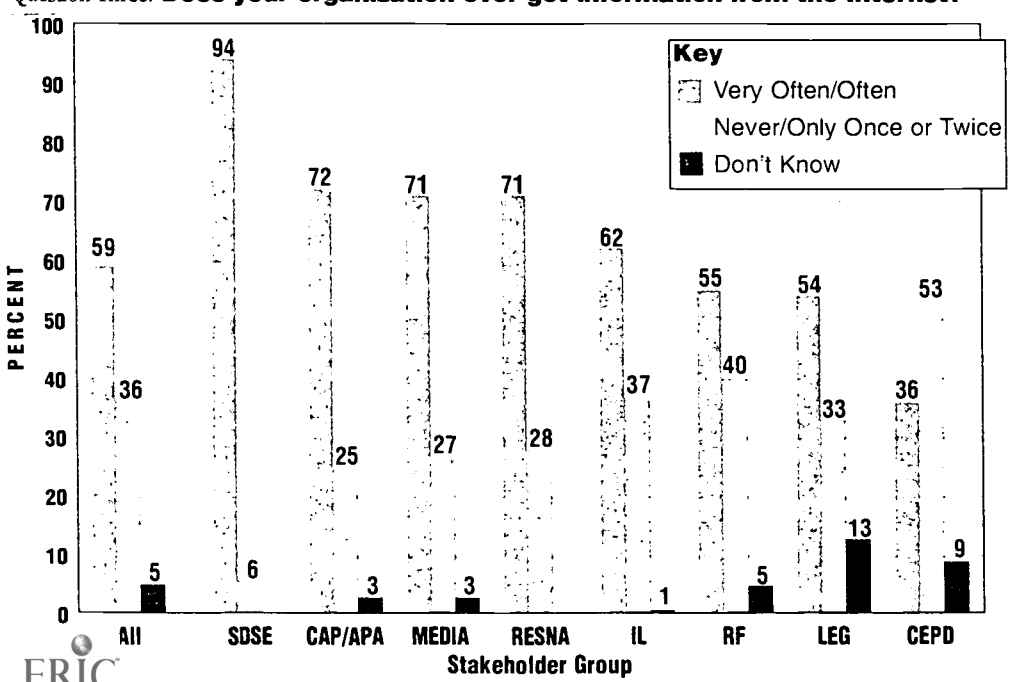
Question Three

Does your organization ever get information from the Internet?

Overall, stakeholders reported they use the Internet to get information. Fifty-nine percent of the stakeholders responded that they access information from the Internet 'Very Often' or 'Often,' while 36 percent responded 'Only Once or Twice' or 'Never.' Five percent responded 'Don't Know.'

FIGURE 1

Question Three: **Does your organization ever get information from the Internet?**



There is a great deal of variation in the responses among the stakeholder groups to this question. SDSE reported using the Internet most often with 94 percent choosing 'Very Often' or 'Often.' CAP/APA was next highest with 72 percent choosing 'Very Often' or 'Often,' followed by MEDIA (71 percent), RESNA (71 percent), IL (62 percent), RF (55 percent), and LEG (54 percent). CEPD was the only stakeholder group with less than half the respondents reporting frequent use of the Internet (36 percent). The two groups who reported using the Internet least often to access information were CEPD (53 percent reported they used the Internet to get information 'Never' or 'Only Once or Twice') and RF (40 percent responded 'Never' or 'Only Once or Twice').

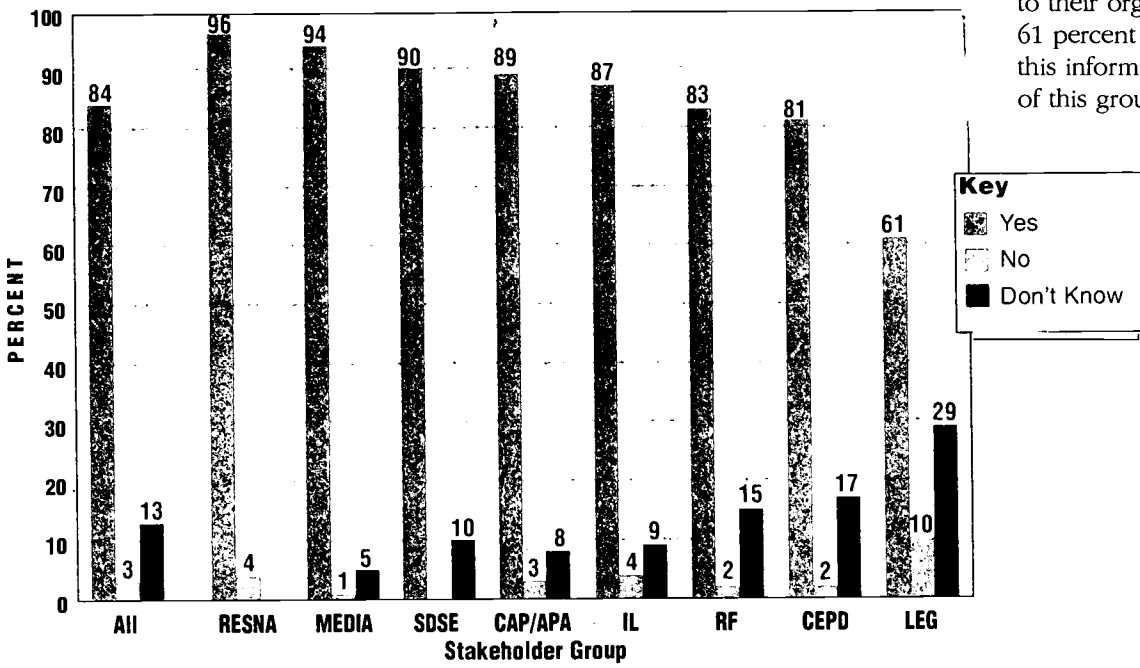
Question Four

Is information from disability research useful to your organization?

When all stakeholder groups' responses were aggregated, 84 percent reported disability research was useful to their organizations.

FIGURE 2

Question Four: **Is information from disability research useful to your organization?**



Examining individual groups, 96 percent of RESNA respondents indicated that disability research is useful, followed by 94 percent of MEDIA. Only one stakeholder group had less than 80 percent of respondents reporting that information from disability research was useful to their organization. Interestingly, only 61 percent of Legislators/Aides found this information useful, while 29 percent of this group responded 'Don't Know'.

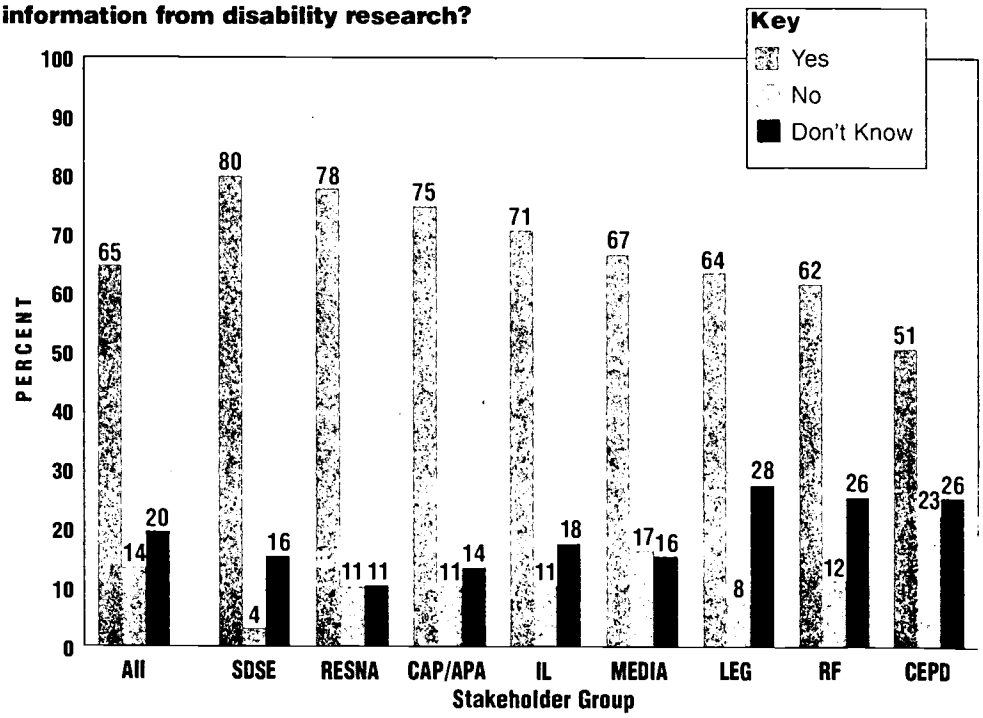
Question Five

Does your organization have a way to find information from disability research?

Overall, about two-thirds of stakeholder respondents reported having a way to obtain information from disability research. For individual stakeholder groups, 80 percent of the SDSE responded 'Yes,' followed by RESNA (78 percent), CAP/APA (75 percent), IL (71 percent), MEDIA (67 percent), LEG (64 percent), RF (62 percent), and CEPD (51 percent).

FIGURE 3

Question Five: **Does your organization have a way to find information from disability research?**



Question Six

How does your organization usually get information to your consumers?

The most frequent response to this question was 'Personal Communication' (79 percent). Other information formats frequently identified were 'Meetings' (76 percent), 'Newsletters' (64 percent), 'Information Mail Outs' (62 percent), 'Training Sessions/Classes/Workshops' (62 percent), and 'Telephone Information Line' (51 percent). The least-cited responses were 'Library/Information Holdings' (22 percent) and 'Other' (16 percent).

Variations existed among the individual stakeholder groups. SDSE and IL reported the widest variety of formats used to get information to their consumers. MEDIA had the highest response of 'Other' (51 percent) and identified their medium (e.g., newspaper, magazine, journal, television, radio) as a primary way of getting information to their consumers. Only one response, 'Newsletters,' received a higher percent of response (56 percent) from the MEDIA group.

TABLE 4
How does your organization usually get information to your consumers?

Stakeholder Group	Personal Comm.	Meetings	News-letters	Mail outs	Work shops	Phone	Fax	Reports	Computer Online	E-Mail	Library	Other
All Stakeholders	79	76	64	62	62	51	40	32	26	24	22	16
SDSE	82	100	76	92	94	63	69	78	82	63	41	8
CAP/APA	95	78	59	69	83	67	55	42	20	27	20	11
MEDIA	42	43	56	46	39	34	31	17	45	35	16	51
RF	83	74	68	61	72	44	34	38	17	10	22	12
RESNA	93	61	54	68	79	43	46	36	39	29	21	14
CEPD	75	88	49	51	53	40	28	27	16	16	17	11
LEG	75	64	42	36	7	35	41	33	19	19	7	17
IL	92	82	83	74	76	66	45	27	19	21	29	8

Discussion of Results

The results of the phase 2 survey show that stakeholders are more alike than different. When comparing the aggregated responses to individual stakeholder responses, many similarities were noted. The average stakeholder uses a variety of sources in a variety of formats to obtain information. 'Print Media' was the source used most often to get information, followed by 'Groups' and 'Professionals.' 'Regular Print' and 'Computers,' both online and file/disk, were the formats which stakeholders preferred for obtaining information. In addition, over half of the stakeholders reported using the Internet 'Very Often' (' to access information.

Examining the responses concerning the usefulness of and the ability to find information from disability research, a general consensus was observed among stakeholder groups. When all stakeholder responses were aggregated, 84 percent stated that disability research was useful. However, fewer stakeholders (65 percent) are able to find disability research. One might ask the following question about this discrepancy: if stakeholders sometimes have difficulty finding disability research, how do they know it is useful?

While there were many similarities in the responses of stakeholder groups, there were also differences. The widest differences among stakeholder groups to the first five questions were found between State Directors of Special Education (SDSE) and Legislators/Aides (LEG). State Directors of Special Education eported the greatest variety of sources and formats to get information, whereas Legislators/Aides used the fewest. The response selected most often was 'Professionals.' This suggests that Legislators/Aides rely more on other people as information sources. In addition, while there was agreement among groups that disability research is useful, Legislators/Aides had the highest percent of 'Don't Know' and 'Not Useful' responses to this question. This may imply that many Legislators/Aides may not use or have adequate access to disability research in their work.

When interpreting the above results, one must consider that differences between State Directors of Special Education (SDSE) and Legislators/Aides (LEG) groups may be a result of variations in response rate. Ninety-six percent of the State Directors of Special Education responded to the survey, while only 25 percent of Legislators/Aides responded. In addition, there was no differentiation between surveys completed by Legislators or Aides. This may account for this group's higher percent of 'Don't Know' responses to questions three, four, and five. The NCDDR did attempt to improve the response rate for Legislators/Aides by contacting federal legislative offices prior to participation in the survey. A legislative aide told NCDDR that members of this stakeholder group rarely respond to surveys. One-fourth of the Legislators/Aides responded, which for this group is a good response rate.

The primary purpose in adding question six for the stakeholder survey was to facilitate a comparison of (a) the way consumers usually get and like to get information with (b) the methods stakeholders use to disseminate information to their consumers.

Consumer responses in phase 1 to questions one and two are reported in *The Research Exchange,* Volume 2, Number 4 (NCDDR, 1997, p. 5). Responses to question one showed that consumers usually get information from 'Popular Media' sources such as television, radio, movies, and videos (76 percent), and 'Print Media' such as books, magazines, newspapers, pamphlets, and brochures (73 percent). These were followed by 'Other People' such as parents, family, and co-workers (68 percent), 'Groups' including meetings, workshops, classes, and conferences (63 percent), and 'Professional People' such as doctors, lawyers, teachers, and caseworkers (62 percent). 'Computers,' whether e-mail, Internet, or file/disk were identified by only about one-fourth of the consumer respondents. Preferred formats reported by consumers on question two included 'Regular Print' (66 percent), 'Video tape' (36 percent), 'Audio tape' (28 percent) and 'Computer' (26 percent).

There is some alignment to the responses made by stakeholders concerning methods they use to get information to consumers. About three-fourths of the stakeholders cited 'Personal Communication' and 'Meetings' as the two methods used the most by their organizations, while about two-thirds of the consumers cited 'Other People,' 'Groups,' and 'Professional People' as information sources. However, greater numbers of consumers identified 'Popular Media' and 'Print Media' as primary sources of information. Stakeholders reported 'Newsletters' and 'Information mail outs' as the third and fourth methods used to get information to consumers. In addition, only about one-third of the stakeholders identified 'Reports' and less than one-fourth selected 'Library/Information Holdings' as methods used to get information to consumers.

NCDDR survey results would suggest 'Popular Media' as the most effective method to disseminate information to consumers, however, there was no option for 'Popular Media' sources on question six of the Stakeholder survey. One stakeholder group, MEDIA, reported using 'Popular Media' to a great degree by choosing the response 'Other' and identifying newspapers, journals, magazines, television, radio, and so on as the information formats they use to get information to their consumers. MEDIA also reported frequent use of 'Computer Online' (45 percent) to get information to consumers. Other stakeholder groups with higher use of 'Computer Online' were SDSE (82 percent) and RESNA (39 percent). However, just over one fourth of consumers chose 'Computer Online' as an information source and preferred format in phase one of this study.

NCDDR hypothesized that the stakeholder group most closely aligned with consumers would be administrators of independent living organizations (IL). In some ways, this hypothesis was supported. While the IL group's highest response choice for sharing information was 'Personal Communication' (92 percent), 'Other People' (parents, family, and co-workers) was chosen by over two-thirds of the consumers. Because of consumers' participation in independent living organizations, 'Other People' would be a more likely response than 'Professionals' when communicating with the staff of these organizations.

The findings of the phase 1 consumer survey also determined that a majority of consumers (72 percent) reported that disability research is useful to them, but over 50 percent reported that they did not have or did not know of ways to find this information (NCDDR, 1997, pp. 6-7). Stakeholders reported slightly higher numbers: 84 percent identified information from disability research as useful, while 65 percent reported their organizations have ways to get such information. With improved dissemination channels, stakeholders might be able to help consumers find and use disability research information.

Limitations

No research is without limitations; this survey study is no exception. The most apparent limitation in the phase 2 portion of the survey is the low response rate for some stakeholder groups. However, in survey research, no single response rate is considered a standard (Fink, 1995; Fowler, 1993). For some surveys, a response rate of 90 percent is desired; in others, 65 percent is deemed adequate. Mail surveys typically have lower response rates than other types of surveys and because nonresponse may introduce error, researchers should take steps designed to promote responses. Some of these steps include personally contacting potential respondents and asking them to participate, sending a reminder to nonrespondents, assuring respondents of confidentiality, and making the survey short and easy to complete. For this study, all these measures were adopted.

More critical than response rate is the degree to which nonrespondents are similar to respondents. For example, Legislators/Aides had the lowest response rate, and therefore the largest percentage of nonrespondents of the stakeholder groups sampled. This raises the question: Are nonrespondents similar to respondents? If the answer is no, then conclusions may be biased. Unfortunately, this question is difficult to answer. Therefore, caution should be

taken with drawing conclusions from the results for the stakeholder groups with the lowest response rates (i.e., RESNA, CEPD, and LEG).

Another limitation is the variable sample sizes as well as response rates within groups. Ideally, the sample would be chosen randomly, stratifying on stakeholder group and with every group having the same response rate. If this were the case, a mean percentage could be calculated for the 'All Stakeholders' category and each stakeholder group would be equally represented. Unfortunately, several of the stakeholder groups were difficult to define (e.g., MEDIA), and others were difficult to personally contact (e.g., LEG). Others were so large or so varied that it would be impossible to identify an inclusive list for the entire group (e.g., CEPD represented different ways local communities choose to address the concerns of people with disabilities, and are not comparable across the country).

In addition to the limitations in regard to sample size and response rate, is the survey questionnaire itself. The questions were few and the content of a limited nature. NCDDR used this survey to gather baseline information and it was important for consumers and stakeholders to respond. Therefore, the decision was made to limit the number and content of the questions, with the intent to follow this survey with another in-depth survey.

Future Research

Phase 1 of this study identified the sources and formats used and preferred by consumers to get information. Phase 2 gives the NCDDR an indication of the ways stakeholder groups get information and share information with their consumers. While comparing the consumer results with stakeholder groups' results showed some alignment, stakeholders do not necessarily use the formats most used or preferred by consumers.

The results of this stakeholder survey will serve as a framework for phase 3 of this survey research, which will focus on NIDRR grantees and their dissemination practices. The survey will be modified to reflect the following:

- Question six will be reworded to more accurately reflect the sources and formats from which consumers get information;
- Several open-ended questions will be added at the end of the survey to allow NIDRR grantees an opportunity to provide additional information; and
- If necessary, nonrespondents will be contacted and asked to complete the survey by telephone.

It bears repeating that while disability research is important for many stakeholders, it is also important for consumers with disabilities and their families. Phase 1 results indicated that consumers think disability research is useful, but have difficulty accessing it. Interestingly, phase 2 results showed that stakeholder groups also value disability research and generally have more ways to find such information. Phase 3 survey activities will gather information from NIDRR grantees to learn more about how disability research information is disseminated. The extent of integration and/or comparability among the three major survey groups of consumers, stakeholders, and NIDRR grantees will be the subject of further analyses.

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NIDRR Grantees and Staff Receive Recognition

The NCDDR congratulates each of the following NIDRR grantees and staff members. All grantees are encouraged to contact the NCDDR with information to share in future issues of *The Research Exchange.*

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Rachel Wobschall, Executive Director of Minnesota's **System of Technology to Achieve Results (STAR)** Program **<http://www.admin.state.mn.us/assistivetechnology/>**, the State Technology Assistance program, was honored by the California State University at Northridge (CSUN) Center on Disabilities **<http://www.csun.edu/cod/>**. She was named to receive the *Strache Leadership Award* during the Twelfth Annual Technology and Persons with Disabilities Conference **<http://www.dinf.org/csun_97/csun97.htm>** held in Los Angeles in March, 1997. The *Strache Leadership Award,* given annually to those who have directly impacted

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NIDRR Grantees and Staff Receive Recognition

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the lives of people with disabilities through assistive technology, is the highest honor the CSUN can bestow. For more information, contact **Ms. Wobschall** at **(651) 297-1554**.

In June, 1998, the **STAR Program's Urban Outreach Project**, in partnership with the Urban Leagues of Minneapolis-St. Paul, was awarded a *Best Practice Award* by the Health Care Financing Administration at their conference in Phoenix. Minnesota STAR was recognized for information and awareness activities regarding assistive technology, reaching over 10,000 individuals in underserved communities. For additional information, contact **Tom Shaffer** at **(651) 296-9718** or e-mail: **tom.shaffer@state.mn.us**

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Several staff members of the **University of Washington Burn Injury Rehabilitation Model System <http://weber.u.washington.edu/~jaycee/>** at the University of Washington Burn Center have received honors.

• **Jason N. Doctor** (with co-authors David Patterson, Ph.D. and Roberta Mann, MD) was awarded the American Burn Association's *1997 Clinical Research Award* for his presentation entitled "Health Outcome for Burn Survivors." This award went to the best paper presented by a non-medical doctor at the 1997 American Burn Association **<http://www.ameriburn.org/>** Annual Meeting. The paper discussed health outcomes of burn survivors at one month and one year follow-up periods, and was published in the *Journal of Burn Care and Rehabilitation, 18(6),* November/December 1997 **<http://www1.mosby.com/Mosby/Periodicals/Medical/JBCR/bc180604.html>**.

• **Kim Calman Holt**, a founding member of the NIDRR Advisory Group at the University of Washington Burn Injury Rehabilitation Model System, was chosen as one of six individuals from the Inland Northwest to be honored at *"Stars: A Celebration Of Heroes"* at the [illegible]ne Arena in Spokane, WA. The award focused on Ms. Calman Holt's dedication and strong commitment as a volunteer at the University of Washington Burn Center and at the Hope House orphanage for children with autism, physical disabilities, and emotional disturbances. She also was cited for her outstanding contributions by helping the community through the school re-entry program and rural outreach, as well as assisting burn survivors and their families. U.S. Army Gen. H. Norman Schwarzkopf was on hand for the presentation of the award.

• **David Patterson**, Ph.D., Co-Principal Investigator received *The Milton Erickson Award for Scientific Achievement in Hypnosis* at the 1997 International Society for Hypnosis and American Society of Clinical Hypnosis **<http://www.asch.net/>** Annual Meeting. The paper for which he and co-authors Dawn Ehde, Ph.D. and Myron Goldberg, Ph.D. were honored focused on decreasing burn pain through hypnosis and was published in the *American Journal of Clinical Hypnosis* **<http://www.asch.net/r6.html>**. For more information, contact **Dolores Palacpac,** Project Coordinator of the University of Washington Burn Injury Rehabilitation Model System, at **(206) 731-2866** or via e-mail: **palacpac@u.washington.edu**

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Dr. Kristofer Hagglund, Principal Investigator of the **Missouri Model Spinal Cord Injury System <http://www.muhealth.org/~momscis>** and Associate Professor in the Department of Physical Medicine & Rehabilitation at the University of Missouri-Columbia, was honored by the Division of Rehabilitation Psychology of the American Psychological Association (APA) **<http://www.apa.org/>**. Dr. Hagglund was selected to receive the *James S. Garrett Early Career Achievement Award* at the APA's annual meeting in Chicago in August, 1997. This award was based on his career achievements to date, many of which are derived from his NIDRR-funded work. For additional information, please contact Dr. Hagglund at **(573) 882-6271** or by e-mail: **hagglundk@health.missouri.edu**

How To Contact The National Center For The Dissemination Of Disability Research

Call Us
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THE

Research Exchange

VOLUME 3, NUMBER 3 1998

In this issue, Web URL and e-mail addresses are usually placed **<between brackets>** to indicate where the address starts and stops. *Do not include these brackets* when keying the address on your Web browser or e-mail software.

The Research Exchange is available in alternate formats upon request.

At a Glance

A WORD FROM THE DIRECTOR

Electronic Accessibility

Overall use and information resources available through the Internet have continued to skyrocket since the previous issue of *The Research Exchange* addressing the accessibility of information on the Internet (Volume 2, Number 1). While we lack the ability to precisely measure usage of the Internet, it is clear that more Americans than ever before have computers in their homes and at work, and are using online services at unprecedented rates.

The growth of electronic information sources offered by NIDRR grantees has also grown significantly. In the summer of 1997, the NCDDR reported (Volume 2, Number 2) that half of NIDRR's grantees had established Web sites. Today, in 1998, over 72 percent of current NIDRR

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Who Needs Web Site Accessibility?

The World Wide Web (WWW) has become an important medium for sharing information. A recent issue of *The Research Exchange* (Volume 3, Number 1) reported that 88 NIDRR grantees (about 28 percent of all grantees) had Web sites in early 1996 (NCDDR, 1998a). In November, 1998, the NCDDR identified 214 Web sites operated by NIDRR grantees, reflecting 72 percent of all grantees funded at that time.

Who visits these NIDRR grantee Web sites? How many people among this audience have disabilities? Learning about Internet and WWW users can help NIDRR grantees focus on the need to develop more accessible Web sites to best meet the needs of a varied audience.

Who Uses the Internet?

It is difficult to define who uses the Internet. Across the board, a variety of methods have been used to track the audience of Internet users. A survey of the U.S. population's use of the Internet and online services identified 62 million adults, or 30 percent of Americans age 16 and older, as 'being online' during the last quarter of 1997 (IntelliQuest, 1998). One study determined that 30 million people may use the Internet within a 24-hour period (Commerce Net/Nielsen Media Research, 1997). Another study estimates that 200 million people worldwide will use the Internet by the year 2000 (CyberAtlas, 1998).

Georgia Tech's Graphics, Visualization and Usability Center (GVU) conducts large scale online surveys in April and October each year. Beginning with the *Second GVU WWW User Survey* in October, 1994, respondents were asked about their disability status, and five percent of the respondents indicated they had a disability. A slight increase in the percentage of respondents with a disability was reported with each new survey. The most recent

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Who Needs Web Site Accessibility?

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survey reported, the *Ninth GVU WWW User Survey* from April, 1998, shows that 6.99 percent of respondents indicated they had a disability. For all GVU Surveys, the category "Vision" was identified by over half of all respondents who indicated they have a disability. Figure 1 shows summary data on disabilities from the GVU User Surveys (GVU, 1998).

The small but steady growth seen in the GVU WWW User Surveys does show an increase in the participation of people with disabilities on the Internet. The low numbers of people who identified themselves as having a disability may reflect the online, self-selecting nature of the survey, and reinforces the fact that many people with disabilities may not have access to computers or may have problems accessing information on the World Wide Web. The data from the GVU Surveys are considerably lower than the incidence rate for disabilities in the population as a whole, but do support the suggestion that approximately 5 percent of people with disabilities have computers, compared with 30 percent of the general population (Hagins, 1995).

Figure 1: Summary of Disability Responses from the GVU WWW User Surveys

	GVU User Survey					
Disability Category	**2nd (10/94) n=3522**	**3rd (4/95) *n=13,006**	**4th (10/95) n=23,348**	**5th (4/96) n=11,736**	**8th (10/97) **n=10,109**	**9th (4/98) **n=12,591**
Vision	118 (3.35%)	396 (3.04%)	802 (3.43%)	436 (3.72%)	447 (4.42%)	520 (4.1%)
Motor	23 (0.65%)	123 (0.95%)	196 (0.84%)	116 (0.99%)	209 (2.07%)	242 (1.9%)
Hearing	20 (0.57%)	115 (0.88%)	185 (0.79%)	102 (0.87%)	176 (1.74%)	175 (1.4%)
Multiple	10 (0.28%)	80 (0.62%)	166 (0.71%)	75 (0.64%)	**Not a choice	**Not a choice
Cognitive	9 (0.26%)	40 (0.31%)	74 (0.32%)	46 (0.39%)	71 (0.70%)	96 (0.80%)
All disabilities	**180 (5.11%)**	**754 (5.80%)**	**1,423 (6.09%)**	**775 (6.61%)**	**+784 (7.76%)**	**++881 (6.99%)**
None	3,342 (94.89%)	11,939 (91.81%)	21,450 (91.87%)	10,761 (91.69%)	9,168 (90.69%)	11,507 (90.3%)
Rather not say	Not a choice	311 (2.39%)	475 (2.03%)	200 (1.7%)	157 (1.55%)	203 (1.6%)

*3rd: Total of all categories = 13,004
**8th/9th: The category "Multiple" was not a choice; respondents were asked to check all categories that applied.
+8th: The total of all disability categories is 903. The figure "784" is the total number "n" minus the number of respondents who selected "None" and "Rather not say."
++9th: The total of all disability categories is 1,033. The figure "881" is the total number "n" minus the number of respondents who selected "None" and "Rather not say."
NOTE: Disability questions were not asked in the 1st (1/94), 6th (10/96), and 7th (4/97) Surveys
Source: GVU. (1998). *GVU's WWW User Surveys*. [Online]. Available: <http://www.gvu.gatech.edu/user_surveys/>

A WORD FROM THE DIRECTOR

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grantees maintain a Web presence. Clearly, the past year has represented phenomenal growth in Web-based information channels focusing on disability research funded by NIDRR.

Along with the growth of the Internet as an informational medium come challenges for NIDRR grantees to ensure that Web-based information is accessible. It is additionally challenging to note that what may have been considered "accessible" on a Web page a year ago, may not be considered "accessible" today. Changes are occurring in software and design practice that are "raising the bar" of accessibility for Web sites. Recent changes in the Web Accessibility Initiative (WAI) guidelines of the World Wide Web Consortium (W3C) require most NIDRR grantees to re-visit their Web sites and make changes to meet the new level of accessibility.

As the Internet has grown, new applications that can be used in Web page design and implementation have increased. As the NCDDR has pointed out previously, the Internet should not be viewed as an electronic form of what has already been produced on paper. New potential features such as chat rooms, news groups, search engines, video, audio, animation, 3-D imaging, merged media, streaming, real-time conference participation, and many other cutting-edge features bring rich, powerful communication options to Web sites. As is often the case, the way in which each is used and the requirements associated with their use, may severely limit some potential viewers with sensory or cognitive disabilities unless special care is taken to ensure alternate accessibility is also accommodated.

Recent advances such as those reflected in HTML 4.0, give hope that accessibility features may, one day, be more automatic. Today, however, accessibility comes from a purposeful set of actions to create it. As NIDRR grantees, we must serve as good accessibility models for others. This issue of *The Research Exchange,* along with the past issue addressing accessibility, provides helpful information and resources that can guide you in making your Web site more accessible. Several NIDRR-funded grantees are national leaders in the area of World Wide Web accessibility, so if you do not find the information you need to make your site as accessible as you wish, contact the NCDDR and staff will direct you to resources that should be helpful.

John D. Westbrook, Ph.D.
Director, NCDDR

How many Americans have Disabilities?

Estimates of the total number of Americans with disabilities vary, depending on the criteria used and the extent of limitations due to disabling conditions. The Americans with Disabilities Act (ADA) of 1990 (Public Law 101-336, 104 Stat. 327) described a population of 43 million people with disabilities in the United States. The Disability Statistics Rehabilitation Research and Training Center (a NIDRR grantee located at the University of California, San Francisco) proposed a figure of 36.1 million, or 14.5 percent of the total population, based on data from the 1990 National Health Interview Survey and additional sources (LaPlante, 1992). This figure increased to 15 percent by 1994 (Key, LaPlante, & Wenger, 1996). The National Council on Disability Bulletin (September, 1997) identified 54 million Americans who reported some level of disability between October 1994 and January 1995 (NCD, 1997).

The Research Exchange, a newsletter to promote the effective dissemination and utilization of disability research outcomes, is published quarterly by the National Center for the Dissemination of Disability Research (NCDDR) which is operated by the Southwest Educational Development Laboratory (SEDL). Neither SEDL nor the NCDDR discriminate on the basis of age, sex, race, color, creed, religion, national origin, sexual orientation, marital or veteran status, or the presence of a disability. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities for all individuals in all employment matters. The contents of this newsletter were developed under a grant (#H133D50016) of $559,986 from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education (ED). However, these contents do not necessarily represent the policy of SEDL, NIDRR, or the ED; do not assume endorsement by the Federal Government.

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<http://www.ncddr.org/researchexchange/>

***The Research Exchange* is available in alternate formats upon request.**

Figure 2: Americans with disabilities, 1991-92

Race/Ethnic group	Total Number	Total with disability	Percent with disability
Native Americans	1,649,000	361,000	21.9
African Americans	31,420,000	6,277,000	20.0
Whites	210,873,000	41,521,000	19.7
Asian/Pacific Islanders	7,855,000	777,000	9.9
Hispanic Origin (may include any race)	21,905,000	3,343,000	15.3
All	251,796,000	48,936,000	19.4

Source: McNeil, J. M. (1993). Americans with disabilities: 1991-92, U.S. Bureau of the Census, Current populations P79-33. Washington: U.S. Government Printing Office.

What about Demographic Factors?

Poverty is a consideration that impacts disability rates. LaPlante, Carlson, Kaye and Bradsher (1996) found that: "Across the board, the poverty rate increases substantially when a householder has a disability and even more so when both householders (in partnered families) have disabilities." (p. 3).

- The poverty rate for partnered families without disability is 7.8 percent.
- In partnered families, the poverty rate increases to 14.2 percent when both partners have disabilities.
- The poverty rate rises to 20.8 percent in partnered families with both one partner and one child with a disability. (LaPlante, Carlson, Kaye & Bradsher, 1996).

The incidence of disability among racial and ethnic groups in the U.S. also varies. Bradsher (1995) found that Native Americans and African Americans had higher rates of disability than other groups. Figure 2 displays some estimates of disability rate by race/ethnic group.

A study conducted at Vanderbilt University and published in the April 17, 1998 issue of *Science* magazine concluded that "a racial divide exists on the Internet." Of 5,813 randomly selected high school and college students interviewed from December 1996 through January 1997, 73 percent of White students reported having a computer at home, compared to 32 percent of African American students. Although income tends to impact computer ownership in general, for households with annual incomes below $40,000 a year, Whites were twice as likely as African Americans to own a computer. The study concluded that "income appears to exert its effect on computer access; it is computer access which in turn explains subsequent Web use" (Novak & Hoffman, 1998).

The data from this study are not supported by the findings of other researchers. A Baruch College-Harris Poll survey found that "almost equal percentages of whites, African Americans, and Hispanics logged onto the Web (30 percent, 27 percent, and 26 percent, respectively)" (Birdsell, Muzzio, Krane, & Cottreau, 1998, p. 34). These differences could also be due to the issue of computer access described above, and that those surveyed in 1997-98 already had computer access that facilitated their use of the Web. The reasons for limited use of the Internet by consumers with disabilities have not yet been clarified through careful study, but applying information from research on the population as a whole would suggest that lack of computer access is likely a primary reason.

Do People with Disabilities Surf the Web?

NCDDR staff conducted a survey of consumers with disabilities affiliated with Independent Living Centers (ILCs) throughout the United States, to learn how they prefer to get information they can use. One question asked about consumers' use of the Internet. Over

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half of the 1,238 consumers that responded (51 percent) said they had *never* used the Internet. Twenty percent responded that they had used the Internet *once* or *twice* and just over one-quarter had used the Internet *often* (15 percent) or *very often* (11 percent) to get information (NCDDR, 1997).

In June, 1998, the NCDDR surveyed 79 administrators of ILCs located throughout the United States to learn about consumers' computer and Internet usage. Only 13 percent of the administrators believed that their consumers generally knew how to use the Internet. Over half of the ILCs (52 percent) offered Internet training for their consumers. A strong majority of administrators (78 percent) felt their consumers do not have adequate hardware and software access to the Internet. Respondents were also asked to estimate the percentage of their consumers that have personal computers with Internet access. Only 11 percent of administrators estimated that more than 25 percent of their consumers have their own computers. Figure 3 presents the results of this NCDDR survey item (NCDDR, 1998b).

Figure 3: Independent Living Center administrators' estimate of ILC consumers who have personal computers and Internet access

Percent of consumers with computers	Percent of respondents
Less than 5%	41%
5 to 24%	37%
25 to 49%	9%
50 to 74%	2%
75 to 100%	0
No idea	11%

Since the WWW was first established in 1989, its purpose was to allow information on a host computer, or server, to be accessed through the Internet by any other computer (Gromov, 1996). The past nine years of phenomenal growth of the Web have also seen the expansion of multimedia capabilities that can affect the accessibility of information for all potential users. The use of graphics, animation, tables, and frames have the potential unintended consequence of limiting, rather than expanding, information access on the Web for some people, for example, those using screenreaders.

The WWW provides creative opportunities within an evolving medium. It is important to keep in mind that all users are different, with unique needs. Many researchers are embracing the Web as an alternate format for communication and information dissemination. NIDRR grantees should be especially aware of the issues related to physical and cognitive accessibility of information placed on the World Wide Web. It is not easy to ensure that the format and content of a Web site are accessible for all users, but that should be each grantee's goal.

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Interactive Elements of the Internet

Individuals and groups are increasingly using interactive tools that offer innovative ways to share ideas and resources on the Internet. These include such technologies as *listservs, Usenet,* and *chat systems* that simulate conventional forms of communications online, and can be incorporated into Web sites. NIDRR grantees may want to examine some of these options to see if they could enhance their efforts to gather and share information about disability research via the Web. Some grantees are already using them effectively and might serve as resources for others.

Listservs

Electronic mailing lists known as *listservs* expand the concept of e-mail and are a staple of Internet discussion. Rather than sending a message to one person's e-mail address, sending to an automated "listserv" address allows you to contact an entire list of subscribers. The subscribers are people interested in the general topic of the list. *Listserv* is the type of software that redirects the mail to all subscribers.

Listservs can either be moderated or unmoderated. A moderated list receives input in the form of e-mail from its subscribers that can be collated, edited and sent back out to the readership. A moderator controls the flow of mail to the list. An unmoderated listserv allows any subscriber to send messages and have them automatically sent to everyone on the list without review.

There are thousands of mailing lists available through the Internet covering many specialized topics. Researchers and educators at universities might start a list for discussing pertinent issues with colleagues. Non-profit organizations may have an announcement listserv for keeping people updated on the organization's events, and individuals with particular hobbies may have a list for meeting others with their interests.

The NCDDR has created and maintains several listservs to assist in facilitating communication among NIDDR-affiliated individuals, including:

- RRTC Research Directors
- work group for a general RRTC World Wide Web site
- work group for a general RERC Web site
- dissemination committee of the Model Spinal Cord Injury System (MSCIS) projects
- NCDDR's Multicultural Task Force

A number of grantees also operate listservs as part of or in conjunction with their NIDRR projects. These are described in a separate article (see p.7) Three indices for listserv discussions include:

- **<http://www.n2h2.com/KOVACS/>** Directory of Scholarly and Professional E-Conferences
- **<http://www.liszt.com/>** Liszt, the mailing list–directory
- **<http://tile.net/lists/>** Discussion Lists on the Internet

Starting a listserv mailing list requires some assistance from a system administrator, or you can make use of sites that offer free list hosting services.

- CoolList **<http://www.coollist.com/>**
- ONElist **<http://www.onelist.com/>**

Usenet newsgroups

Like listservs, newsgroups allow individuals to post questions, comments, and suggestions for review and response by other readers. Internet newsgroups form the "Usenet," which is the mass of hierarchically and topically oriented text-based forums for people to post messages. Usenet newsgroups are similar to public bulletin boards where anyone can post messages on any subject. Unlike listserv messages which show up in your private mailbox and may only have a select group of readers, newsgroup postings are carried by publicly-accessible servers all over the world, and can have an audience of millions. Some newsgroups are regulated and have a set of guidelines, either in the form of a charter or a Frequently

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Asked Questions (FAQ) document, that people should read and follow before posting messages.

Accessing the Usenet can be done through newsreading software, such as *Forte's Free Agent* for PCs **<http://www.forteinc.com/agent/>**, or *MT-Newswatcher* for Macs **<http://www.best.com/~smfr/mtnw/mtnewswatcher.html>**, which then connects to a news server to list and retrieve postings. Internet service providers often have a server dedicated to Usenet messages. Most of this software combines e-mail and newsreading functions into one package, so switching between the two is easy. Netscape, for example, builds the capability to connect to Usenet servers into its *Communicator* software, while Microsoft offers an e-mail/newsreader addition to its Internet Explorer browser called *Outlook Express*.

Web gateways to Usenet that do not require separate newsreading software, such as the free *DejaNews* **<http://www.dejanews.com/>** or the fee-for-service *Newsguy* **<http://www.newsguy.com/>**, also exist. Both of these allow newsgroups to be searched and read directly from their Web sites, as well as messages to be posted online.

Web Bulletin Boards

An alternative to newsgroups are Web-based discussion forums, or bulletin boards, which are hosted on a specific Web server. These bulletin boards are private and may be monitored. They are often more convenient than either listservs or Usenet groups because they can be accessed through a Web browser and integrated into a Web site. Web bulletin boards vary greatly in appearance and complexity, and may be customized for your site's need.

One popular option is the *Ultimate Bulletin Board* **<http://www.ultimatebb.com/>**, which comes in both free and professional versions. A demonstration of this forum can be seen on the NCDDR's Web site for Rehabilitation Research and Training Centers: **<http://www.ncddr.org/rrtc/forum/cgi/Ultimate.cgi>**. As with other Internet resources, there is a search engine available to find Web bulletin boards: *Forum One* **<http://www.forumone.com/>** tracks and indexes over 180,000 such discussion forums.

Online Chat

Even more interactive are the various forms of direct online discussion ("chatting"). A chat, in virtual-spaces identified as "channels" or "rooms," allows multiple people to simultaneously communicate by typing comments back and forth, in real-time. This way of communicating is transitory as it is only viewed by participants as the discussion occurs, although a chat log may be saved for later review. Online chatting has the benefit of being immediate, mirroring such real-world concepts as teleconferencing, and can be used as an alternative or supplemental way to talk to a large group. Chats can be closed (admittance by password) and scheduled for particular topics or to speak with a special guest, for instance—or they can be open and available continuously for anyone who might happen to stop by. In either case, the communications are often informal, with active chatters creating their own electronic slang or "Netspeak."

The best known chatting system is the "Internet Relay Chat" (IRC) in which thousands of people simultaneously take part in chats about numerous topics, on hundreds of servers worldwide. IRC predates the Web; it was originally developed in Finland in 1988 to replace the "Talk" program which let a single Internet user type messages to one other. Most online chatting programs are modeled on IRC.

Many servers are available for public use, and each "chatter" must have client software to be able to connect to a server and join a chat room or channel. While public chat servers are used primarily for socializing, running the hosting software on a private system would make it feasible for research and work groups to conference in online meetings. The original IRC software required learning a variety of commands, but newer versions are easier to use. Commercial derivatives are available for many platforms and can be accessed from separate IRC software, or directly in a Web page via Java.

- *ichat ROOMS* **<http://www.ichat.com/products/rooms.html>**
- *ConferenceRoom* by WebMaster **<http://www.webmaster.com/>**
- *Chat Server* by Microsoft **<http://www.microsoft.com/ie/chat/>**
- *IRCHelp* **<http://www.irchelp.org/>** is a complete archive of helpful files including FAQs, guides, etc.
- As it does with listservs, *Liszt* **<http://www.liszt.com/chat/>** identifies current IRC channels.
- A listing of Internet Chat sites can also be found at *WebWorld* **<http://webworld.cedar.net/cgi-bin/chat/body.cgi>**
- Ziff-Davis's *ChatUser* **<http://www.zdnet.com/products/chatuser.html>** discusses a variety of online interactive elements, including how to add chatting technology to Web sites.

NIDRR Grantees and Web Interactivity

These and other evolving technologies can be incorporated into grantees' Web sites to increase interaction with other researchers and members of the greater public audience. The purpose and goals of such interaction must be specified ahead of time. Some strategies (such as a chat) require more effort in terms of monitoring and guiding the interaction. Others require more resources in terms of server and hardware and/or software.

As with all Internet technologies, the use of interactive components must consider accessibility for varied users. Screen readers can manage text-based formats, such as those employed in listservs, Usenet, and IRC, but may have difficulty with Java implementations. Grantees should strive to make their Web sites as accessible as possible for all potential visitors.

NIDRR Grantees Offer Listservs

Several listservs are operated by grantees around the topics of their NIDRR-funded projects. These lists were reported to the NCDDR in the fall of 1998. The list name, description and other information, and subscription instructions are provided.

Generally, to subscribe through automated software, you should leave the "Subject:" line of your message blank (you may be directed otherwise), and be sure any automatic signature features are turned off. Terms placed between brackets [ ], such as [list name] [your first name] [your email address], indicate where you should put the actual list name you want to join, or your own first name, last name, or email address.

Project: ADA National Access for Public Schools Project

List Name: ADA-L

URL for Information:
<http://www.adaptenv.org/public_schools/>
Note: ADA and the Schools–ListServ Information page is being updated, December, 1998.

Description: The ADA ListServ is a mailing list for people involved with the Americans with Disabilities Act in schools throughout the United States. The participants in this list are urged to use this mechanism to share their thoughts, ideas and suggestions regarding the ADA in schools.

Subscription Instructions: Send a message to Kathy Gips **<KGips@adaptenv.org>** at the ADA National Access for Public Schools Project and she will add your name to the list.

Project: California Assistive Technology System (CATS)

List Name: CATS News

URL for Information:
<http://www.catsca.org/CATSnews.html>

Description: CATS Assistive Technology News Service is an announcement list. Subscribers will receive short articles, reviews, and announcements about the world of assistive technology for persons with disabilities, about every two weeks, as it is published. Subscribers will be able to read, save and use all the information posted, and will be free to use these articles in other newsletters and bulletins so that information will be distributed as widely as possible. The editor and CATS ask only that CATS News is credited.

Subscription Instructions: Send an email message to:
<catsnews-subscribe@ezmlm.cfilc.org>
You do not need to include any text in the subject or body of the message. You will receive a confirmation message before your address is added to the list.

Project: Kentucky Assistive Technology Service Network (KATS)

List Name: KATS Network mailing list

Description: The KATS Network is a statewide, consumer-driven organization. Its primary mission is to establish a statewide, comprehensive system for the provision of assistive technology devices and services to individuals with disabilities.

Subscription Instructions: Go to **<http://www.katsnet.org/subscribe.html>** and enter your email address in the space provided. Submit form.

Project: Ohio Regional Traumatic Brain Injury Model System

List Name: Assembly, BI-ISIG, BI-Pedia, Casemantbi, RehabPsych, SprtGrpLdr, StateExec, TBI-IR, TBI Prevnt, TBISATREAT, TBIState

URL for Information: <http://www.ohiovalley.org/community/subscribe/index.html>

Description:

- **Assembly:** a list for state Brain Injury Association executive directors and presidents.
- **BI-ISIG:** a list for members of the Brain Injury Interdisciplinary Special Interest Group of the American Congress of Rehabilitation Medicine.
- **BI-Pedia:** a list for caregivers and parents of children with brain injuries.
- **Casemantbi:** a list for persons that are case managers or resource and service coordinators for persons with brain injuries. The primary focus is for persons working in community-based settings.
- **RehabPsych:** a list for American Psychological Association members in Division 22 (Rehabilitation Psychology).
- **SprtGrpLdr:** a list for Brain Injury Support Group Leaders.
- **StateExec:** a list for Executive Directors of state Brain Injury Associations.
- **TBI-IR:** a list for persons working in Information and Referral about issues of TBI. URL for information: **<http://www.ohiovalley.org/community/subscribe/referral.html>**
- **TBI-Prevnt:** a list for persons working in the area of prevention of brain injury. URL for information: **<http://www.ohiovalley.org/community/subscribe/prevent.html>**
- **TBISATREAT:** a list for persons serving individuals with brain injuries and substance abuse problems. URL for information: **<http://www.ohiovalley.org/community/subscribe/abuse.html>**
- **TBIState:** a list for state government employees responsible for brain injury programs and eligible for membership in the National Association of State Head Injury Administrators.

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NIDRR Grantees Offer Listservs,

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Subscription Instructions: Please subscribe only to those lists you are eligible to join. Send an email message to **<listserver@lists.acs.ohio-state.edu>** (leave Subject: line blank) and in the body of the message type: subscribe [list name] [your first name] [your last name]. You may also send email to Gary Lamb-Hart **<lamb-hart.1@osu.edu>** and request to be added to a specific list.

Project: Oklahoma ABLE Tech

List Name: ABLETECH List Server

URL for Information:
<http://www.okstate.edu/wellness/listserv.htm>

Description: The List Server is a public forum for conversation among parents, consumers, and people who work in the disability-related field (currently has 230 subscribers).

Subscription Instructions: Send an email message to:
<LISTSERV@listserv.okstate.edu>
Type the message: SUBSCRIBE ABLETECH-L [your name]. After you have subscribed, you may email a message to everyone on the list by using: **<ABLETECH-L@listserv.okstate.edu>**

Project: RRTC in Neuromuscular Diseases

List Name: NMD FastServ List

URL for Information:
<http://disability.ucdavis.edu/FastServ.html>
Note: A new Web address **<http://www.rehabinfo.net/>** *will be available early in 1999.*

Description: Breaking news or information the RRTC disseminates rapidly to interested parties.

Subscription Instructions: Send an email message to:
<NMDinfo@ucdavis.edu>
In the "Subject:" line, indicate the name of the neuromuscular disease or other specific topic for which you want to receive NMD FastServ news.

Project: Southeast DBTAC (Region IV)

List Name: adhoc, affiliates, netadmin, netwk

URL for Information: <http://www.sedbtac.org/>

Description: Following are brief descriptions of the lists and subscription information.

- **adhoc:** This is a group of individuals selected by the regional ADA network who are already experienced in the online world, and who help guide the project by sharing their ADA and online experiences. To join this advisory group, send an email message to **<se-dbtac@mindspring.com>** and ask to join the 'adhoc' list.
- **affiliates:** This list includes all SE DBTAC State and Local Affiliates, designated by the SE DBTAC and its eight State Affiliates to serve as additional points of contact in each state. The list is open only to disignated DBTAC network affiliates (to subscribe, send an e-mail message to **<se-dbtac@mindspring.com>** with a request to join the 'affiliates' list).
- **netadmin:** This list consists of all Network Administrators, designated by each DBTAC State Affiliate to serve as single point of contact in each state. The list is open only to designated DBTAC network administrators (to subscribe, send an e-mail message to **<se-dbtac@mindspring.com>** with a request to join the 'netadmin' list).
- **netwk:** This is a group of individuals who use telecommunications for a variety of purposes. They communicate for information sharing and problem solving about challenging ADA issues and concerns. To subscribe, send a message to: **<netwk-request@MailingList.net>** with the message: Subscribe. When a confirmation to verify the email address is received, use 'Reply' and 'Send' in your email program to be added to the mailing list.

Project: Speaking to Write: Realizing the Potential of Speech Recognition for Secondary Students with Disabilities

List Name: spk2wrt

URL for Information:
<http://www.edc.org/spk2wrt/spk2wrt.html>

Description: This is a moderated discussion forum for students or adults who have used speech recognition technology themselves or with secondary students with disabilities. The primary focus is the educational issues associated with using speech recognition technology to support students with disabilities in home and school settings. To access the spk2wrt archive containing a full list of all discussion threads, go to: **<http://www.edc.org/spk2wrt/hypermail/>**

Subscription Instructions: Send an email message to **<majordomo@mail.edc.org>** (leave Subject: line blank). In the body of the message, type: subscribe spk2wrt. You do not need to include your email address or name. Should you have questions or comments about the spk2wrt listserv, please contact the current owner at **<spk2wrt@edc.org>**

Project: Texas Assistive Technology Partnership (TATP)

List Name: Wired Across Texas

URL for Information:
<http://www.edb.utexas.edu/coe/depts/sped/tatp/wired.html>

Description: Wired Across Texas is a list for discussing topics of interest to persons with disabilities, their families and friends.

Subscription Instructions: Send an email message to **<listproc@mcfeeley.cc.utexas.edu>**. In the body of the message write: subscribe wired [your first name] [your last name]. Or, email the project directly: **<johnz@utxvms.cc.utexas.edu>** and ask to be added to the list.

Project: TRACE CENTER (RERC on Information Technology Access, RERC on Universal Telecommunications Access, Understanding and Increasing Adoption of Universal Design in Product Design)

List Name: basr-l, irlink-l, publicitm-l, TAAC-L, telecom-l, uaccess-l, uasig19-l, Webaccess-l

URL for Information:
<http://www.tracecenter.org/world/kiosks/itms/pitm_l.html?listerv>

Description: Following are brief descriptions of the lists and their subjects.

- **basr-l:** Browsers and screen readers
- **irlink-l:** Discussion of Bi-Directional Infrared Communications Link Standard
- **publicitm-l:** A forum for discussion of issues concerning the accessibility of Public Information/Transaction Machines (formerly kiosk-l)
- **TAAC-L:** This list is to facilitate communication among members of the Telecommunication Access Advisory Committee. Because the meetings of the Committee are public, the discussions on this listserv are also public and anyone may join. URL for information: **<http://trace.wisc.edu/docs/taac_listserv/taac_l.htm>**
- **telecom-l:** Discussion of the US Access Board's Telecom Access guidelines
- **uaccess-l:** Discussion of Universal Access to Information Systems
- **uasig19-l:** RESNA Universal Access SIG discussion group
- **Webaccess-l:** Discussion of access to Web sites

Subscription Instructions: To join any of the discussion lists, send a message to **<listproc@tracecenter.org>** and include the following in the body of the message:
subscribe [list name] [your first name] [your last name].

Project: Washington Assistive Technology Alliance

List Name: WASH-AT

URL for Information:
<http://wata.org/forum/subscrib.htm>

Description: This discussion forum was established as a networking resource for consumers of assistive technology (AT) and their families, AT professionals, and others interested in AT in Washington and Pacific Northwest Region (also posts to Usenet newsgroup wash.assistive-tech).

Subscription Instructions: To subscribe, send a message from your regular email account to **<listproc@u.washington.edu>** (leave Subject: line blank). In the body, type: subscribe wash-at [your first name] [your last name].

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Microsoft Announces Grant to Support Accessibility Research And Development

Microsoft Corp. announced the creation of a new international grant program to support research and product development initiatives that make PC technology more accessible and effective for people with disabilities. The new program, **Exploring PC Accessibility: New Discoveries**, was introduced during a presentation by Microsoft's accessibility group before the United Nations, in conjunction with the U.N.'s International Day of Disabled Persons on December 3, 1998.

Microsoft will award one-year grants of up to $50,000 cash to educational or not-for-profit organizations that are developing accessibility technologies to be placed in the public domain. A total of $250,000 will be distributed through this program.

The **Exploring PC Accessibility: New Discoveries** grant also is intended to increase the knowledge base of all groups dedicated to improving accessibility of PC technology and to facilitate the dissemination of new accessibility concepts and products. Perhaps most important, the grant will provide an opportunity for those in the accessibility field to share new thinking.

Applications for **Exploring PC Accessibility: New Discoveries** grants must be submitted on or before **Feb. 12, 1999**. Information about the grant program and application process can be obtained from Microsoft's Accessibility Home Page at **<http://www.microsoft.com/enable/grants/default.htm>**

Award winners will be announced March 16, 1999 at the annual Technology and Persons With Disabilities Conference, hosted by California State University Northridge in Los Angeles.

Source: Microsoft Corp. (December 3, 1988). Press Release. [Online]. Available: <http://www.microsoft.com/presspass/press/1998/dec98/accgrantpr.htm>

Update on Strategies for Web Accessibility

In 1997 the NCDDR presented issues of Web accessibility in *The Research Exchange, Vol. 2, No. 1* (NCDDR, 1997). Many of these suggestions are still useful for Web page developers, and should be recognized by grantees as important to making information on their Web sites available and usable to many different users, including people with disabilities. Rather than repeat this information here, the NCDDR presents some new ideas and issues in Web acessibility in this issue. The *Annotated WWW Resource List* has been updated and new entries are included. Volume 2, Number 1 of *The Research Exchange* is available on the World WideWeb at **<http://www.ncddr.org/researchexchange/v02n01/index.html>** or you may request a paper copy or alternate formats from the NCDDR office.

The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.

—Tim Berners-Lee, W3C Director and inventor of the World Wide Web (W3C, 1998c)

Web Accessibility Initiative (WAI)

The Web Accessibility Initiative (WAI) is an international effort to raise awareness about World Wide Web accessibility for people with disabilities, and to coordinate efforts to develop standards. The WAI is sponsored by the World Wide Web Consortium (W3C), which established in 1994 to oversee development of protocols and the evolution of the Web. As of November, 1998, 280 companies from around the world participate as members of the Consortium.

The WAI was launched during the 6th International World Wide Web Conference in Santa Clara, California in April 1997. Through its International Program Office (IPO), the WAI enables partnering and coordination among the many stakeholders in Web accessibility: industry, disability and other non-profit organizations, government, research organizations, Web developers and content providers. Judy Brewer, Director of the IPO, was formerly director of the Massachusetts Assistive Technology Partnership (MATP), which was funded through NIDRR by the Technology-Related Assistance for Individuals with Disabilities Act.

Integrating the WAI on all fronts of Web development is critical to ensure that accessibility protocols are a part of the future of the World Wide Web. For example, a number of accessibility features are incorporated into HTML 4.0, the latest version of the language used to publish files on the Web (W3C, 1998b). A general *Web Accessibility Initiative Interest Group* (WAI IG) provides a forum for discussion of issues related to Web accessibility via a listserv and occasional face-to-face meetings. The WAI focuses on five primary areas of work: technology, guidelines, tools, education and outreach, and research and development. Specific working groups and interest groups pursue activities in these areas, including:

- *WAI User Agent Guidelines Working Group* (for browser software accessibility) **<http://www.w3.org/WAI/UA/>**
- *WAI Authoring Tool Guidelines Working Group* (to make authoring tools accessible to authors with disabilities and provide support for creating accessible Web documents) **<http://www.w3.org/WAI/AU/>**
- *WAI Evaluation and Repair (ER) Working Group* (to produce tools that will be offered to people who create and need to maintain or repair web sites) **<http://www.w3.org/WAI/ER/WG/>**
- *WAI Evaluation and Repair Interest Group* (to provide input to the ER Working Group) **<http://www.w3.org/WAI/ER/IG/>**
- *WAI Education and Outreach Working Group* (to develop strategies and materials to increase awareness among the Web community of the need for, and solutions to, Web accessibility) **<http://www.w3.org/WAI/EO/>**
- *WAI Page Author Guidelines Working Group* (for Web page developers/authors) **<http://www.w3.org/WAI/GL/>**

Dr. Gregg Vanderheiden is co-chair of the *WAI Page Author Guidelines Working Group,* along with Chuck Letourneau of Canada's Starling Access Services. Dr. Vanderheiden and staff at the Trace Center, a NIDRR grantee, developed guidelines for accessible Web sites that served as the basis for the *WAI Accessibility Guidelines: Page Authoring* (W3C Working Draft—18 September 1998) **<http://www.w3.org/TR/WD-WAI-PAGEAUTH/>**. These guidelines are used by *Bobby,* the Web accessibility validator, for its analysis of Web pages. Developers of Web pages are encouraged to follow these guidelines to improve accessibility for all visitors to WWW sites.

A number of resources are maintained at the WAI's Web site **<http://www.w3.org/WAI/>**, including news briefs, charters and minutes of working group/interest group meetings, subscription instructions and archives of listservs, references for Web accessibility, as well as drafts and final versions of products developed by WAI participants (W3C, 1998c).

The comprehensive nature of the WAI, beginning with the development of international protocols for the Web, the development of guidelines, and education efforts, will help ensure that the need for accessibility is not overlooked in the ongoing evolution of the World Wide Web as an information dissemination, communication and research medium. The participation of NIDRR and NIDRR grantees reflects the value that NIDRR research can provide to such an important undertaking.

Bobby

Keeping up with the changes and progress in Web accessibility is an ongoing challenge. One source of help is *Bobby,* a Web-based program that reviews existing pages to verify accessibility and browser compatibility. *Bobby* examines a page and identifies ways it may not be accessible to people with disabilities. *Bobby* describes specific problems and gives suggestions and tips on improving accessibility, based on the W3C's *WAI Page Author Guidelines.* Earlier versions of *Bobby* rated each page's accessibility with one to four stars, but the current version (3.0) rates a page as *Bobby Approved* or not approved. If all pages are approved by *Bobby* as accessible and compatible with current HTML 4.0 standards, a site may display the *Bobby Approved* icon **<http://www.cast.org/bobby/approved.html>**.

Bobby also identifies problems which prevent a Web page from being displayed correctly on a variety of browsers (including different versions of Netscape Navigator, Internet Explorer, America Online, Mosaic, Lynx, and WebTV) without having to individually test the page with each browser. *Bobby* examines three levels of HTML coding incompatibilities. A recent search found over 4,000 Web pages with links to *Bobby.* A downloadable freestanding version of *Bobby* is also available to facilitate review of an entire Web site **<http://www.cast.org/bobby/download.html>**.

Bobby is a free service that was developed by the Center for Applied Special Technology's (CAST) Universal Design Lab staff and Josh Krieger. CAST is a not-for-profit organization, founded in 1984. CAST's mission is to expand opportunities for individuals with disabilities through innovative computer technology (CAST, 1998).

HTML 4.0

The codes to publish documents on the WWW are written in HyperText Markup Language (HTML). The current version of HTML is 4.0, and the most recent revised W3C draft recommendation, was made public in April, 1998 (W3C, 1998b). HTML provides a standard that documents to be used across various platforms (PC, Macintosh, UNIX, etc.) and with different hardware. The W3C works to coordinate these standards so that Web developers use the same codes, and browser developers (such as Netscape and Microsoft Explorer) can implement the same protocols. Jesse Berst, ZDNET Anchor Desk, identified the key improvements over HTML 3.2 as:

1. Better forms. On-screen forms with the features people like from Windows and Mac (labeled buttons, disabled buttons, grouped buttons, tool tips, keyboard shortcuts and more).
2. Better tables. Scrollable tables, fixed headers, tables that break across pages for printing, and so on.
3. Better programmability. A standard way to embed objects and scripts.
4. Better frames. "Embedded" (inline) frames within an HTML document.
5. Better character sets. Easier ways to use special characters for languages other than English, for mathematics, and for other purposes (Berst, 1997).

The W3C highlighted the following features of HTML 4.0 that enhance Web accessibility for people with disabilities:

- The new 'form' features support groupings, labels, shortcuts and titles to enhance their usability.
- The new 'table' feature supports using captions to make the content easily accessible in Braille or speech (W3C, 1998b).
- The use of *Cascading Style Sheets* allows a developer to provide options in designing a page, while users can set up parameters for their own best viewing (W3C, 1998a).

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New Review of NIDRR Grantees' Web Sites

How are NIDRR's grantees using the World Wide Web (WWW) to share information with the world at large? A review of grantees' Web sites in November, 1997 (NCDDR, 1998) was repeated in November, 1998. Over the year, the percentage of NIDRR-funded grantees with Web sites had increased from 58 percent in 1997 (176 of 284 projects) to 72 percent in 1998 (214 of 300 projects). In 1996, 32 percent of grantees had sites on the Web (88 of 270 projects). This rapid increase reflects the general growth of the Web. NCDDR staff originally analyzed grantees' Web sites to identify common characteristics, and one year later, to see what changes or trends could be highlighted.

The NCDDR identified 20 objective characteristics to use in the Web site analysis. These characteristics stemmed from a discussion in *The Research Exchange Vol. 2, No. 3* (NCDDR, 1997) that addressed the "communication power" of a WWW site. NCDDR staff chose to review the following characteristics:

- **Access Icons**—inclusion of symbols indicating accessibility for users with disabilities, e.g. Bobby Approved, NCAM Web Access Symbol.
- **Audio**—inclusion of audio snippets as part of the Web site
- **Animation**—inclusion of moving graphics
- **Copyright**—inclusion of a copyright symbol (©)
- **Disclaimer**—inclusion of a statement that the views expressed did not necessarily reflect the views of the Government and general responsibility for content of site
- **Forms/E-mail**—inclusion of feedback channels such as forms or electronic links
- **Frames**—inclusion of multiple "windows" on a single web page
- **Interactive Dimensions**—inclusion of special features to promote interaction among Web site users, e.g. chat rooms, bulletin boards, or other interactive elements
- **Graphics Only**—inclusion of only graphics to communicate information through the Web site
- **Links to NCDDR**—inclusion of a hypertext link to the National Center for the Dissemination of Disability Research (NCDDR)
- **Links to NIDRR**—inclusion of a hypertext link to the National Institute on Disability and Rehabilitation Research (NIDRR)
- **Links to NIDRR Projects**—Inclusion of one or more links to other projects funded by NIDRR
- **Navigation Tools**—inclusion of "buttons" or other devices to assist users in moving around to major areas of a Web site
- **NIDRR Acknowledged**—inclusion of a statement that the Web site was part of a project funded through NIDRR
- **Search Engine Availability**—inclusion of one or more search engines as part of the Web site design
- **Text and Graphics**—inclusion of both text and graphics within the Web site
- **Text Only**—inclusion of text without graphics, or inclusion of alternate text-only pages
- **Update Notice**—inclusion of a date indicating the last revision to the site
- **Video**—inclusion of video snippets as part of the Web site

NCDDR staff reviewed all grantee Web sites during the period November 11-20, 1997, and again November 2-9, 1998. For each review, sites that could not be accessed on a first attempt were tried again the following day. Sites that could not be accessed on the second day were not included in the review. Of the 214 NIDRR grantee Web sites, NCDDR staff were unable to access only one during the time frame of the review in 1998. Four sites were not accessed and not included in 1997. Percentages of grantee Web sites with specific characteristics are reported in Figure 4.

Figure 4: Percentage of Characteristics Noted Across NIDRR Grantees' Web sites

Characteristic	Percentage (1998) n=213	Percentage (1997) n=171
Text and Graphics	98	70
Navigation Tools	89	78
Forms/Email	86	86
NIDRR Acknowledged	70	57
Links to NIDRR Projects	51	23
Update Notice	41	51
Links to NIDRR	31	24
Copyright	31	21
Search Engine Availability	26	16
Disclaimer	23	19
Access Icons	23	10
Animation	19	13
Text Only	19	31
Links with NCDDR	18	11
Interactive Dimensions	12	4
Frames	9	13
Audio	2	4
Video	2	2
Graphics Only	0	0

Comparison of Findings from 1997-1998

These were the major findings of the NCDDR review of Web sites:

- The most common feature of NIDRR grantees' Web sites was the use of both text and graphics (98 percent); up from 70 percent in 1997. The most common feature in 1997 was the use of forms and/or electronic mail links (86 percent). This figure remained constant in 1998.
- Nearly three-quarters (70 percent) of the grantees acknowledged NIDRR as the funding agency supporting the project work presented on their Web site (up from 57 percent in 1997).

- Over half (51 percent) of grantees include one or more links to other NIDRR-funded projects in 1998. This more than doubled, from 23 percent in 1997.
- Nearly one-third (31 percent) of grantees include a link to NIDRR's homepage from their Web site (up from 24 percent in 1997).
- Over one-quarter (26 percent) of grantee Web sites included a search engine (up from 16 percent in 1997).
- The use of a copyright symbol and/or disclaimer increased over the year. In 1997, 21 percent of grantee Web sites displayed a copyright symbol (©); this increased by nearly half, to 31 percent of all grantees' sites in 1998. A disclaimer statement was observed in 19 percent of sites in 1997; this increased to 23 percent in 1998.

Review of Accessibility

As the use of the Web page is seen as an effective tool for dissemination, the issue of accessibility of Web site information for users with disabilities has become more immediate. The World Wide Web Consortium (W3C), through its Web Accessibility Initiative (WAI) and special features in the HTML 4.0 publishing language, has embraced accessibility of the Web for people with disabilities. Some accessibility features include alternate text labels and descriptions for pictures and graphics, ensuring that page layouts do not confuse content when read by a screenreader, supplying scripts or captions for video or audio content, and providing text-only alternatives for images that provide content.

In its brief review of NIDRR grantees' Web sites, the NCDDR used *Bobby* as a measurement tool. *Bobby* is Web-based software developed by the Center for Applied Special Technology (CAST) <http://www.cast.org/bobby/> for the purpose of verifying accessibility (CAST, 1998). In 1997, the *Bobby* software version assigned from one to four stars, depending on the number of accessibility problems found on the page reviewed. In 1998, *Bobby* version 3.0 is based on the W3C's *WAI Page Author Guidelines* (W3C, 1998). A page is identified as *Bobby Approved* if no accessibility errors are found.

Accessibility Findings

In 1997, approximately one-third (36 percent) of the NIDRR grantees' Web site home pages earned four stars to be recognized as *Bobby Approved*. In 1998, this figure increased to 43 percent of the sites reported as *Bobby Approved*. It is important to note that this increase occurred while many of the sites also use more text and graphics, animation, and other interactive elements that can impact accessibility if not implemented with care. The review of accessibility of NIDRR grantee Web sites is presented in Figure 5.

Content is Everything

In the 1998 Web site review, NCDDR also looked at several content aspects of each grantee's Web site. All (100 percent) of the grantees use their Web sites to introduce the organization and/or NIDRR-funded grant project, as well as their products and services. Some use Web sites to provide data or other information in downloadable or printable forms, and others use their sites for marketing of available products. This was a subjective overview, primarily scanning several pages of each site to see if information materials were directly available to Web visitors, or if only ordering forms and instructions were presented. Approximately 56 percent of the NIDRR grantees sites do provide information that can be downloaded or printed, while 5 percent demonstrated a marketing focus that allowed visitors to order information for purchase that was not available directly from the site.

The updating of Web sites is important to ensure that information is current and to encourage visitors to return frequently to seek new information. The 1998 review of Web site characteristics found that 41 percent of current NIDRR grantees' Web sites provided a notice of the last update on their home pages. Of these, 66 percent were updated within 3 months of the review. Eleven percent were last updated from 3 to 6 months before the review, 7 percent within 6 to 12 months, and 16 percent were last updated 12 months or longer prior to the review.

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Figure 5: Percentage of NIDRR Grantee Web Site Home Pages Evaluated as Bobby Approved, listed by NIDRR Program Areas

NIDRR Program Area	Percentage (1998)n=213	Percentage (1997)n=171
ADA Technical Assistance	92	39*
Contracts	0	0
Disability and Rehabilitation Research Projects	0	—
Fellowships	0	25
Field-Initiated Research	40	20*
Model Spinal Cord Injury System	27	25
Research & Demonstration Projects	30	56
Rehabilitation Engineering Research Centers	38*	56
Rehabilitation Research and Training Centers	34	31
Research Training Grants	33	50
Small Business Innovative Research	100	50
State Technology Assistance	51	37**
Utilization Projects	100	67
All Projects With Web Sites	43	36

* One site not reviewed
** Two sites not reviewed

New Review of NIDRR Grantees' Web Sites,
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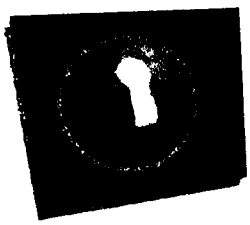
Using Access Icons

Special graphic images or icons have been designed to demonstrate a site's goal of accessibility.

The *Bobby Approved* icon may be displayed by a Web site on its home page when all pages in the site are *Bobby Approved*. CAST suggests that if some pages do not meet accessibility requirements, those pages that do can carry the notation "This page is Bobby Approved." In a case where most pages are approved, CAST suggests the site may use the *Bobby Approved* icon with a list of pages which are not, preceded by the text "The pages listed below are not yet Bobby Approved." (CAST, 1998).



The National Center for Accessible Media (NCAM) of CPB/WGBH in Boston developed the *Web Access Symbol* to show Web users that a site is emphasizing accessibility for all users. Use of this icon is self-assigned, and there are no specific criteria required for a site to display the globe with keyhole *Web Access Symbol* for people with disabilities (NCAM, 1998).

Conclusions

Information gained from the NCDDR's 1998 review of NIDRR grantees' Web sites found several trends. The greatest increases from 1997 to 1998 included:

- Use of Interactive Dimensions
- Use of Access Icons
- Links to other NIDRR projects

These characteristics demonstrate increasing use of the communication and information sharing features of the Web (Use of Interactive Dimensions, Links to other NIDRR Projects), as well as understanding and showing attention to accessibility issues (Use of Access Icons).

Greatest decreases were seen among these characteristics:

- Use of Audio
- Use of Text Only
- Use of Frames

Less use of Text Only demonstrates increasing sophistication of Web sites (most sites used both Text and Graphics) while a decrease in the use of Frames could reflect more attention to accessibility. The drop in use of Audio may also respond to accessibility concerns.

Looking at the accessibility of NIDRR grantees' Web sites, there was an increase from 1997 (36 percent) to 1998 (43 percent) in the percentage of grantee Web sites that were identified as *Bobby Approved*. This is a good increase, especially considering the fact that the total number of grantees' Web sites increased and that the use of interactive dimensions, graphics, and animation increased among NIDRR grantee Web sites overall. Nevertheless, these data show that in 1998, more than half (57 percent) of the NIDRR grantee's Web sites still present accessibility errors that prevent them from being *Bobby Approved*.

Grantees are once again encouraged to apply the graphical Web-based Bobby program to their Web site in order to begin evaluating its accessibility for people with disabilities. It is reasonable to expect that NIDRR grantees' Web sites should be held to a higher standard reflecting what is desired in every WWW site—the most accessible sites possible for all users, including Web visitors with disabilities.

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Annotated WWW Resource List

(Updated December, 1998)

This is a small sampling of the resources available on the World Wide Web (WWW). Each listing is accompanied by a brief description. These sites provide useful information that supports the development of effective, interesting Web pages that are accessible to a variety of visitors.

Accessibility

AccessAbility Online Resource
http://accessability.noie.gov.au/welcome.cfm
Commissioned by Australia's National Office for the Information Economy, this Web resource aims to raise awareness of the accessibility issues faced by people with disabilities who wish to use online services. Among other things, this database includes information on hardware and software products, standards development, training and education issues, support programs, policy papers and case studies, both from Australia and key international sources.

Accessible Web Page Design
http://weber.u.washington.edu/~doit/Resources/web-design.html
Information on accessible Web page design and links from the DO-IT Project (Disabilities, Opportunities, Internetworking, and Technology) at theUniversity of Washington.

Accessible Web Page Design
http://www.eskimo.com/~jlubin/disabled/web-desi.htm
Copyright © 1994-1998 by Jim Lubin. Links to information on accessible Web page design, testing your Web page for accessibility, graphics, and on-line design discussions; also links to other disABILITY information and resources.

Accessible Web Page Design
http://www.igs.net/~starling/acc/actoc.htm
Copyright © 1997-8, Starling Access Services. Guidelines for making Web page components accessible; links to other resources.

- **General Design Tips**
  http://www.igs.net/~starling/acc/acgen.htm
  General style guidelines and tips for specific disabilities.

Adaptive Technology Resource Centre
http://www.utoronto.ca/atrc/
The University of Toronto's ATRC promotes the integration of alternative access systems throughout the information technology infrastructure.

- **HTML Commandments**
  http://www.utoronto.ca/atrc/rd/html/commandments.html
  10 rules for writing accessible HTML, by Dena Shumila, ATRC Vision Technology Consultant; graphic and screen reader versions.
- **Inclusive Web Design—How to Create Accessible Web Pages**
  http://www.utoronto.ca/atrc/rd/slideshows/inclusive.html
  Presented by Kevin Nguyen and Jutta Treviranus at the Seventh Annual World Wide Web Conference, Brisbane Australia, April 14th, 1998; Tutorial Slides. Page includes many links to further readings and references.

Alliance for Technology Access (ATA)
http://www.ataccess.org/
The ATA is a network of community-based resource centers dedicated to providing information and support services to children and adults with disabilities, and increasing their use of standard, assistive, and information technologies.

- **Designing Access To WWW Pages**
  http://www.ataccess.org/design.html
  Those who design and construct web sites can do a great deal to ensure universal access to their sites. Awareness of some of the potential barriers and possible solutions should help web page designers to employ practices which will lead to the inclusion of everybody.

Center for Applied Special Technology (CAST)
http://www.cast.org/
Founded in 1984, CAST is a not-for-profit organization whose mission is to expand opportunities for individuals with disabilities through innovative computer technology.

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Annotated WWW Resource List: **Accessibility**
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Compatibility & Accessibility
http://www.pantos.org/atw/access.html
Towards the creation of an accessible, truly World-wide Web, from All Things Web. Articles include:
- Click Hear (A preliminary look at CSS-based audio optimization)
- Some Readers... Aren't (Not every visitor is a "reader")
- The Art of ALT (Building effective ALT text)
- Could Helen Keller Read Your Page? (Technical tips on improving the accessibility of a Web page)
- Accommodating Imperfection (Designing for accessibility)

EASI: Equal Access to Software and Information
http://www.rit.edu/~easi/
People with disabilities must have the same access to information and resources as everyone else. EASI's mission is to promote this access through on-site and on-line workshops; publications and videos; e-mail discussion lists; web site; electronic journal; and through participation in a wide variety of regional and national conferences.

National Center to Improve Practice (NCIP)
http://www.edc.org/FSC/NCIP/
The National Center to Improve Practice in Special Education through Technology, Media, and Materials promotes the effective use of technology to enhance educational outcomes for students with sensory, cognitive, physical, social/emotional disabilities.
- **Accessibility of this Site**
  http://www.edc.org/FSC/NCIP/Accessibility.html
  Describes NCIP's design strategies to make their Web site accessible for all users.

NCSA Mosaic Access Page
http://bucky.aa.uic.edu/
Mosaic was one of the first Internet information browsers and World Wide Web clients, developed at the National Center for Supercomputing Applications at the University of Illinois in Urbana-Champaign. This page presents Mosaic's disability access efforts.

WebABLE!
http://www.yuri.org/webable/
Located at the Yuri Rubinsky Insight Foundation Web site, WebABLE! is a Web directory for disability-related Internet resources.
- **People with Disabilities Can't Access the Web**
  http://www.yuri.org/webable/mp-pwdca.html
  Background paper, resource links by Mike Paciello

WWW Accessibility to People with Disabilities—A Usability Perspective
http://www.staff.uiuc.edu/~jongund/access-overview.html
An overview of Web accessibility needs by Jon Gunderson of the Mosaic/Web Access Project.

WWW Browser Accessibility Recommendations
http://www.staff.uiuc.edu/~jongund/access-browsers.html
A paper by Jon Gunderson on browser accessibility guidelines.

WWW Consortium (W3C)
http://www.w3.org/
The World Wide Web Consortium was founded in 1994 to develop common standards for the evolution of the World Wide Web.
- **Web Accessibility Initiative (WAI)**
  http://www.w3.org/WAI/
  The World Wide Web offers the promise of transforming many traditional barriers to information and interaction among different peoples. The W3C's commitment to lead the Web to its full potential includes promoting a high degree of usability for people with disabilities.
- **WAI Accessibility Guidelines: Page Authoring**
  http://www.w3.org/TR/WD-WAI-PAGEAUTH/
  This document is a list of guidelines that page authors should follow in order to make their pages more accessible for people with disabilities as well as more useful to other users, new page viewing technologies (mobile and voice), and electronic agents such as indexing robots.
- **WAI Quick Tips Reference Card**
  http://www.w3.org/WAI/References/QuickTips
  The WAI QuickTips reference card is a concise summary of a few key design principles for making Web sites accessible to people with disabilities and more usable for everyone. The QuickTips are based on the WAI Page Author Guidelines, developed by the WAI Education & Outreach Working Group, and meant only to help people remember some principles of accessible design.
- **WAI Reference List on Web Accessibility**
  http://www.w3.org/WAI/References/
  This WAI Reference List on Web Accessibility highlights the work of many organizations around the world in improving accessibility for people with disabilities.

Assessing Web Pages

Bobby
http://www.cast.org/bobby/
Bobby is a graphical Web-based program designed by the Center for Applied Special Technology to help web site designers and graphic artists make their web pages accessible by the largest number of people.

Validators and Document Checkers
http://www.htmlhelp.com/links/validators.htm
This list of links to sites that check for HTML syntax errors is maintained by the Web Design Group.

W3C HTML Validation Service
http://validator.w3.org/
This is an easy-to-use HTML validation service based on an SGML parser. It checks HTML documents for compliance with W3C HTML Recommendations and other HTML standards.

Web Page Accessibility Self-Evaluation Test
http://www.psc-cfp.gc.ca/dmd/access/testver1.htm
Developed by the Diversity Management Directorate, Public Service Commission of Canada. You should be able to "score" a Web page's Accessibility Quotient and make the necessary corrections, using this simple self-evaluation test.

What does your HTML look like without graphics?
http://www.slcc.edu/webguide/lynxit.html
This page is provided by Salt Lake Community College to help HTML programmers get an idea of how non-graphics browsers, such as Lynx, would see their page. Lynx is a text-based hypertext browser with full World Wide Web capabilities.

Browser Software

BrowserWatch
http://browserwatch.internet.com/
BrowserWatch was founded and is still maintained by Dave Garaffa for Internet.com, Mecklermedia's source for Internet news and resources.

Can I run Lynx on my OS?
http://www.crl.com/~subir/lynx/platforms.html
A text-based browser, Lynx is one of the early products still in use today.

Home Page Reader
http://www.austin.ibm.com/sns/hpr.html
By teaming up IBM's ViaVoice OutLoud™ text-to-speech, SAPI-compliant speech synthesizer and Netscape 'Navigator', IBM's Home Page Reader orally communicates web-based information just as it is presented on the computer screen.

Microsoft Internet Explorer
http://www.microsoft.com/windows/ie/default.htm
Internet Explorer, the browser developed by Microsoft. The newest Internet Explorer beta is designed to be simpler, more automated, and more flexible than any other browser.

NCSA Mosaic
http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/
Mosaic is one of the first Internet information browsers and WWW clients. NCSA Mosaic was developed at the National Center for Supercomputing Applications at the University of Illinois, Urbana-Champaign.

Netscape
http://home.netscape.com/browsers/
Netscape Communicator combines Netscape Navigator, the world's most popular browser, with a suite of Internet tools for high-performance Internet mail, web page creation, and instant messaging.

pwWebSpeak Overview
http://www.prodworks.com/pwwovw.htm
pwWebSpeak was designed and developed by The Productivity Works, Inc. in conjunction with De Witt and Associates, who act as accessibility consultants to the project, and Thomas Edison State College. pwWebSpeak is a trademark of The Productivity Works, Inc. Copyright © 1996-98.

Cascading Style Sheets

Cascading Style Sheets
http://www.w3.org/Style/CSS/
Cascading Style Sheets (CSS) is a simple mechanism for adding style (e.g. fonts, colors, spacing) to Web documents. Many resources for understanding and applying CSS are provided.

Cascading Style Sheets
http://www.htmlhelp.com/reference/css/
Change the appearance of hundreds of Web pages by changing just one file. Influence presentation without losing visitors. All with the power and flexibility of Web style sheets, from the Web Design Group.

Practical style sheets
http://builder.com/Authoring/CCSToday/
Joseph Schmuller's article (11/10/98) on how to take advantage of CSS without abandoning older browsers, from CNET's Builder.com.

Chat/Conferencing Technology

Chat Server
http://www.microsoft.com/ie/chat/
The Microsoft Chat family home page, where you can explore links to information about Microsoft Chat 2.5 and Microsoft V-Chat 2.0.

Chat at InternetUser
http://www.zdnet.com/products/chatuser.html
ZDNet's resources including tools, software, how to, etc.

ConferenceRoom
http://www.webmaster.com/
ConferenceRoom, the WebMaster Chat/Conferencing client and server software for Windows.

Forum One
http://www.forumone.com/
The Web's search engine for online forums

ichat ROOMS
http://www.ichat.com/products/rooms.html
ichat ROOMS serves as on online forum to add real-time interaction to your Web site.

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Annotated WWW Resource List: **Chat/Conferencing Technology**
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IRCHelp Home Page
http://www.irchelp.org/
#IRCHelp.org is operated by volunteers from the #IRCHelp channel on the EFnet (IRC network) and provides over 800 help files, such as FAQ, tutorials, server lists, and others to support Internet Relay Chat.

Liszt's IRC Chat Directory
http://www.liszt.com/chat/
The only place you can search for 37871 IRC channels on 27 IRC networks.

Ultimate Bulletin Board
http://www.ultimatebb.com/
What sets the UBB apart from other online bulletin board systems is its unique interface, extensive administrative features, and easy customization.

General Design and Related Issues

CNET Builder.com
http://builder.com/
This resource provides information in the following areas: Authoring, Programming, Graphics, Servers, Business, Builder Buzz, Builder News, Builder Downloads, Resources, and Conferences.

Computers and the Disabled
http://www.pctv.com/pctv/shows/chronicles/96-97/1424/1424.html
This issue of *Computer Chronicles* highlights various perspectives from different authors on computers and people with disabilities.

HTML Writers Guild
http://www.hwg.org/
The HWG exists to assist our members in developing and enhancing their capabilities as web authors, to compile and publicize information about standards, practices, techniques, competency, and ethics as applied to web authoring, and to contribute to the development of the web and web technical standards and guidelines.

Internet World
http://www.internetworld.com/
Internet World, published monthly by Mecklermedia in Westport, Conn. began as a newsletter and became a full-color newsstand magazine in September 1993.

- **Good, Bad, and Ugly Pages**
  http://www.internetworld.com/print/monthly/1996/04/bottom.html
  This article from *Internet World* 7 (4) April, 1996, by Joel Snyder looks at planning before launching a Web site and errors to avoid.

Government Policies

Center for Information Technology Accommodation
http://www.gsa.gov/coca/
CITA (formerly the Clearinghouse on Computer Accommodation—COCA) is located in the General Services Administration. Links are provided to policies and guidelines.

- **Make Your Web Pages Accessible**
  http://www.itpolicy.gsa.gov/cita/wpa.htm
  Numerous links to government and other sources
- **World Wide Web Home Page Guidelines and Best Practices**
  http://www.itpolicy.gsa.gov/cita/guidelines.htm
  The guidelines from the World Wide Web (WWW) Federal Consortium (founded in 1994) now include policy considerations which Federal Agencies should review as they update and/or make new use of the Internet and expand WWW sites to conduct agency business.

Policy Statement on Making Materials and Information Available and Accessible to Individuals with Disabilities
http://www.ed.gov/pubs/Sec504/append-d.html
This policy clarifies the obligations of the United States Department of Education under Section 504 of the Rehabilitation Act of 1973, as amended, to make its materials accessible and available to its disabled customers.

World Wide Web Server Policy and Procedures
http://www.ed.gov/internal/wwwstds.html
Defines the specific standards and general guidelines which the U.S. Department of Education uses to make information available on the World Wide Web (revised--March 1998).

World Wide Webserver of the City of San Jose
http://www.ipac.net/csj/
The Web site of San Jose, California, was selected as a model City link by the federal CITA.

- **Web Page Disability Access Design Standard**
  http://www.ipac.net/csj/oaacc/disacces.html
  Standards are presented and serve as a model for other site developers (Rev. August 12, 1998).

Hardware/Software Developers

Accessibility and Disabilities Site
http://www.microsoft.com/enable/
Welcome to Microsoft's Accessibility and Disabilities site, where we provide information and tools that can help you remove barriers and make the world more accessible.

Disability Resources from Apple Computer
http://www.apple.com/education/k12/disability/
Apple is deeply committed to helping persons with special needs attain an unparalleled level of independence through a personal computer.

IBM Special Needs Systems
http://www.austin.ibm.com/sns/
IBM technology can open doors for achievement and independence and enhance the employability, education, and quality of life of people who have disabilities.

HTML Information

Beginner's Guide to HTML
http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html
The NCSA Beginner's Guide is still the most frequently requested file on NCSA's Web site.

HTML 4.0 Reference
http://www.htmlhelp.com/reference/html40/
The Web Design Group's reference for the new HTML standard.

HTML 4.0 Specification
http://www.w3.org/TR/REC-html40/
W3C Recommendation, revised on 24-Apr-1998. This specification defines the HyperText Markup Language (HTML), version 4.0, the publishing language of the World Wide Web.

Introduction to HTML
http://www.cwru.edu/help/introHTML/toc.html
With this tutorial, you can pick up the basics of the HyperText Markup Language (HTML) in a few short hours. You will not know everything there is to know about HTML when you reach the end of the tutorial, but you will know enough to create a perfectly respectable Web page. Developed by Case Western Reserve University, this tutorial includes two sequels: *HTML2.0: Forms and Obscurities* and *HTML3.2: Here's Wilbur!*

Spotlight on HTML!
http://builder.com/Authoring/Html/
CNET Builder.com's complete collection of HTML tips, tutorials, and trade secrets for beginners to experts, and everyone in-between.

Twenty Questions about HTML 4.0
http://builder.com/Authoring/Html40/
By Dan Schafer (9/16/97), the questions cover "What is HTML 4.0" to "What's Next for HTML?"

Increasing Awareness of Web Sites

Found It On the Net
http://www.internetworld.com/print/monthly/1996/01/found.html
Linda Engelman's column in the Internet World (1996, January) discusses how to attract visitors to your Web site. Make your presence known; promote without offending.

How <comp.infosystems.www.announce> works (FAQ)
http://www.sangfroid.com/charter.html
The purpose of this moderated newsgroup is to publicize non-commercial Web-based resources of potentially world-wide interest.

Promote Assist
http://online-biz.com/promote/assist.shtml
An aid to submitting your Web site to some of the more popular indices, catalogs, spiders and "What's New" lists on the WWW.

Submit It!
http://www.submit-it.com/
A popular free or paid service for sending URLs to search engines and directories.

WebPromote Free Submit
http://freesubmit.webpromote.com/freesubmit_intro.html
Now WebPromote, a leader in Directory Listing Services brings you a quick, easy and free way to submit your web site to nine of the most popular search engines on the Internet.

Internet/WWW—General

All Things Web
http://www.pantos.org/atw/
The primary focus of ATW is to help Web designers and authors create usable, "reader-friendly" Web pages. Usable means many things: structurally sound, long-lived, syntactically correct, broadly accessible, easily navigable.

International World Wide Web Conferences

- **Sixth International World Wide Web Conference**
  http://access.www6conf.org/
  The theme of the Sixth International World Wide Web Conference, held April 7–11, 1997 in Santa Clara, California was accessibility: Everyone-Everything-Connected.
- **Seventh International World Wide Web Conference**
  http://www7.scu.edu.au/
  Held in Brisbane, Australia, April 14-18, 1998.
- **Eighth International World Wide Web Conference**
  http://www8.org/
  Toronto, Ontario, Canada, May 11-14, 1999. This conference will bring together leaders from academia, research organizations, government and industry, offering delegates a chance to gain a global perspective of the issues facing the Web community.

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Annotated WWW Resource List: **Internet/WWW—General**
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Web Design Group
http://www.htmlhelp.com/
The Web Design Group was founded to promote the development of non-browser-specific, non-resolution-specific, creative and informative sites that are accessible to all users worldwide.

World Wide Web Primer
http://www.vuw.ac.nz/~gnat/ideas/www-primer.html
Written in 1994 by Nathan Torkington, this primer still provides a good general overview of the Web.

WWW Tools and Places
http://mambo.ucsc.edu/psl/wwwtp.html
A listing of links about the WWW, search engines, government and other interesting sites.

Web Developer's Virtual Library
http://www.stars.com/
The Webmaster's Illustrated Encyclopedia of web technologies and design principles. Includes tutorials, examples, and links to resources. It's for webmasters, web designers and Internet developers. The WDVL is one of the oldest web developer web sites, dating from 1994.

Listserv/Mailing Lists

Directory of Scholarly and Professional E-Conferences
http://www.n2h2.com/KOVACS/
The Directory of Scholarly and Professional E-conferences screens, evaluates and organizes discussion lists, newsgroups, MUDs, MOOs, Mucks, Mushes, mailing lists, interactive Web chat groups etc. (e-conferences) on topics of interest to scholars and professionals for use in their scholarly, pedagogical and professional activities. Copyright © 1998 by Diane K. Kovacs and The Directory Team.

Liszt, the mailing list directory
http://www.liszt.com/
Liszt is a directory of Internet discussion groups: mailing lists, newsgroups, and IRC chat channels.

ONEIist
http://www.onelist.com/
A free e-mail community service where you can start and manage new e-mail communities, subscribe to existing e-mail communities and view archives of old messages.

TileNet Discussion Lists on the Internet
http://tile.net/lists/
This WWW site is a reference to all the LISTSERV, ListProc and Majordomo email discussion and announcement lists on the Internet.

News Groups

DejaNews
http://www.dejanews.com/
Welcome to Deja News, The Discussion Network! You've discovered the only Web site where you can read, search, participate in and subscribe to more than 80,000 discussion forums, including Usenet newsgroups.

Forte's Free Agent
http://www.forteinc.com/agent/
A simple but reliable offline newsreader to help you navigate through the newsgroups, Free Agent offers the basic features and functionality you need, it's easy to use, and it's free! Agent is a commercial version of Forté's newsreader.

MT-Newswatcher
http://www.best.com/~smfr/mtnw/mtnewswatcher.html
MT-NewsWatcher is a Usenet news reading application for the Macintosh, based on John Norstad's NewsWatcher application. MT-NewsWatcher adds to the basic NewsWatcher a number of useful features, including multi-threading, filtering, spell checking, and speech recognition.

Newsguy
http://www.newsguy.com/
Newsguy News Service is a membership based news server that provides access to over 7500+ newsgroups. Members can access the newsgroups through either a newsreader (NNTP), or through our website interface by using a standard web browser.

NIDRR Grantee Resources

This section highlights a sampling of NIDRR grantees with information available on the WWW focusing on aspects of computer communication accessibility.

Access to Disability Data (InfoUse)
http://www.infouse.com/disabilitydata/
InfoUse specializes in the development of health, disability and rehabilitation information using computer technology.

- **Accessibility Issues, Access to Disability Data**
  http://www.infouse.com/disabilitydata/addaccess.html
  InfoUse and other key national sources have developed materials on principles of accessible design, along with some specific guidelines.

RESNA Technical Assistance (TA) Project
http://www.resna.org/hometa1.html
RESNA Technical Assistance Project activities are aimed at facilitating efforts of the nationwide assistive technology programs to reduce barriers to the acquisition of assistive technology devices and services by individuals with disabilities.

ADA Technical Assistance Coordinator (ADA-TAC)
http://www.adata.org/
This contract addresses the needs of businesses, the disability community, and state and local governments in implementing the ADA by utilizing state-of-the-art electronic communication media as well as traditional media outreach.

Center for Universal Design
http://www.design.ncsu.edu/cud/
The Center for Universal Design, part of the School of Design at North Carolina State University, is a national research, information, and technical assistance center that evaluates, develops, and promotes accessible and universal design in housing, buildings, and related products.

CPB/WGBH National Center for Accessible Media (NCAM)
http://www.wgbh.org/wgbh/pages/ncam/
NCAM develops strategies and technologies to make media accessible to millions of Americans, including people with disabilities, minority language users, and those with low literacy skills.

Rehabilitation Engineering Research Center on Technology Transfer
http://wings.buffalo.edu/ot/cat/rerc-t2.htm
The Tech Transfer RERC at the Center for Assistive Technology, the University at Buffalo, will facilitate and improve the process of moving new, improved and useful assistive technology devices to the marketplace, to benefit people with disabilities.

Trace Center, University of Wisconsin
http://www.tracecenter.org/
The Trace Center is an interdisciplinary research, development and resource center on technology and disability. It is part of the College of Engineering at the University of Wisconsin-Madison.

Search Engines

Alta Vista	**http://www.altavista.com/**
CNET Search.Com	**http://search.cnet.com/**
Excite	**http://www.excite.com/**
HotBot	**http://www.hotbot.com/**
Infoseek	**http://infoseek.go.com/**
Livelink Pinstripe	**http://pinstripe.opentext.com/**
Lycos	**http://www.lycos.com/**
Magellan (directory)	**http://magellan.excite.com/**
Webcrawler	**http://webcrawler.com/**
Yahoo (directory)	**http://www.yahoo.com/**

Add an Engine
http://www.iw.com/1996/05/engine.html
Eric Richardson describes how to add a search engine to a site and provides links to a number of free and commercial search engines, *Internet World* (May, 1996).

Search Engines
http://webreference.com/content/search/
What they are, how they work, and practical suggestions for getting the most out of them, by Bruce Grossan (Feb. 1997).

Search Engine Watch
http://www.SearchEngineWatch.com/
Most visitors to Search Engine Watch fall into one of two groups. There are webmasters, web marketers and others involved with creating and promoting web sites. Then there are search engine users, everyone from researchers, librarians and general web surfers who want to know how to find things better using search engines.

Universal Design

The Benton Foundation
http://www.benton.org/
The Benton Foundation promotes public interest values and non-commercial services for the National Information Infrastructure through research and policy analysis, outreach to nonprofits and foundations, and print, video, and online publishing.

- **Universal Service and the Information Superhighway**
  http://www.benton.org/Library/Universal/brief1.html
  (briefing paper)
- **Universal Service and Universal Access Virtual Library**
  http://www.benton.org/Policy/Uniserv/
  (extensive listing of publications)

Designing a More Usable World for All
http://www.tracecenter.org/world/
The Trace Center has developed a number of papers, guidelines, and resources in the broad area of accessibility and universal design.

Universal Accessibility—A Matter of Design
http://www.prodworks.com/ua_9606.htm
Copy of presentation materials by Ray Ingram, June, 1996.

Universal Design
http://www.design.ncsu.edu/cud/ud/ud.html
Universal Design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

NIDRR Grantees and Staff Receive Recognition

The NCDDR congratulates each of the following NIDRR grantees and staff members. All grantees are encouraged to contact the NCDDR with information to share in future issues of *The Research Exchange*.

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Dr. Katherine Seelman, Director of NIDRR, was invited to represent the U.S. and to be one of three plenary speakers at the *TIDE III Congress* **<http://www.stakes.fi/tidecong/>** in Helsinki, Finland on June 23-25, 1998. TIDE (Technology Initiative for the Integration of Disabled and Elderly people) is a group of applied research projects in Assistive Technology funded by the European Union. Her speech on *Disability's New Paradigm: Implications for Assistive Technology and Universal Design* is available on the NCDDR Web site at **<http://www.ncddr.org/speeches/tide.html>**. Dr. Seelman also visited an independent living center in Helsinki and discussed the social network in Finland, especially the range of options for assistance, such as Personal Assistance Services.

NIDRR has also been honored in other venues:

- A plaque was awarded to **Dr. Seelman** at the International Conference on Universal Design on June 9, 1998, at Hoftstra University (Long Island, New York) recognizing **NIDRR**'s commitment to and leadership in universal design.
- At the Centers for Disease Control and Prevention's Tenth Anniversary Commemoration 1988-1998, Office on Disability and Health, **NIDRR** was presented with a plaque which reads: *"In recognition of NIDRR support for Promoting Health and Preventing Secondary Conditions Among Persons with Disabilities."*

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The **RRTC in Secondary Complications in Spinal Cord Injury** of the University of Alabama at Birmingham's Spain Rehabilitation Center, received the *AMA International Health and Medical Film Festival Finalist Award* in 1997. The American Medical Association conferred the award for excellence in the film "Reproductive Health for Women with Spinal Cord Injury: Part 1, The Gynecological Examination." **Dr. Amie Jackson**, Medical Director and Principal Investigator, and **Ms. Barbara Key**, Director of Training, worked on the training project. For additional information on these items, please contact **Barbara Key** at **(205) 934-3283** or by e-mail: **key@sun.rehabm.uab.edu**

Dr. Robert Friedman, Principal Investigator of the **RTC for Children's Mental Health**, University of South Florida, is participating in the development of the *Report of the Surgeon General on Mental Health*. The *Report* was commissioned on September 30, 1997. For additional information, contact CDR Patricia A. Rye, JD, MSW, Managing Editor, Center for Mental Health Services, SAMHSA, 5600 Fishers Lane, Room 15-105, Rockville, MD 20857. You may also contact **Jane Willis**, the RTC's Coordinator of Outreach and Training Programs, at **(813) 974-8429** or by e-mail: **willis@fmhi.usf.edu**

Ms. Jessica A. Jonikas, Managing Director of the **National RTC on Psychiatric Disability**, University of Illinois at Chicago, was competitively elected to the Board of Directors of the International Association of Psychosocial Rehabilitation Services. Ms. Jonikas is serving a two-year term that began in June, 1998. **Dr. Judith Cook** is the Director of the **National RTC**. For additional information please contact **Ms. Jonikas** at **(312) 422-8180 ext. 18** or by e-mail: **jonikas@psych.uic.edu**

Mike Ruef, PhD, a Doctoral Fellow with the **RTC on Improving the Functioning of Families Who Have Members with Disabilities**, received the *1998 Dissertation of the Year* from the School of Education, University of Kansas, for *The Perspective of Five Stakeholder Groups on the Challenging Behavior of Individuals with Mental Retardation and/or Autism.* An article from this dissertation is published in the premier issue of the *Journal of Positive Behavior Intervention.* **Drs. Ann and Rud Turnbull** are the Co-Principal Investigators of the project. For further information, please contact **Dr. Ruef** at **(785) 864-7600**.

Dr. Marianne Farkas, Co-Principal Investigator of the **RTC in Rehabilitation for Persons with Long-Term Mental Illness** (Boston University/Sargent College), received the *James Beard Award* from the International Association of Psychosocial Rehabilitation Programs (IAPSRS) in June, 1998 for promoting programs in psychosocial rehabilitation. For additional information, please contact **Dr. Farkas** at **(617) 353-3549** or by e-mail: **mfarkas@bu.edu**

Mr. Ken Galea'i and the **RRTC of the Pacific**, San Diego State University, participated in the *Association of Pacific Island Legislatures (APIL), 17th General Assembly* on May 28, 1998. Mr. Galea'i was asked to be a staff consultant, and the APIL passed a resolution based on the findings of the RRTC's research. **Dr. Fred McFarlane** is the Principal Investigator of the RRTC. For additional information, please contact **Ken Galea'i** or **Fred McFarlane** at **(619) 594-4220** or by e-mail: **fmcfarla@mail.sdsu.edu**

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Rowland Hazard, M.D., a Project Director at the **Vermont RERC for Low Back Pain**, Vermont Back Research Center at the University of Vermont, and **Steven Reinecke, M.S.**, a Center Project Director from 1988 to 1993, were awarded a patent in Europe in June, 1997, for a new backrest for people with chronic or disabling low back pain. A U.S. patent was granted in 1991 for the device, which is based on the principle of continuous passive motion (CPM). Commercially known as The *BackCyclerCPM,* the device was designed and tested with funding from

NIDRR. Commercial production and distribution have been assumed by Ergomedics, Inc., of Colchester, Vermont, (802) 655-2225. For more information, please contact the Information Office at the Vermont Back Research Center, **(800) 527-7320** or send an e-mail query to: **backtalk@salus.med.uvm.edu**

Staff members from the **RERC on Accessible and Universal Design in Housing** at North Carolina State University received the 1998 *Pin Dot Award* sponsored by the Pin Dot Corporation at the RESNA Conference in June, 1998. The award was for the best paper published this past year in RESNA's *Assistive Technology Journal.* "An Analysis of the Effects of Ramp Slope on People with Mobility Impairments," was written by **Jon Sanford**, **Molly Story**, and **Mike Jones** and appeared in Volume 9.1/1997 of *Assistive Technology Journal.*

In April, 1998, the late **Ron Mace** and **Mary Story** of the **RERC** staff also received the 1997-98 *Faculty Research Award* from the School of Design, NCSU. The award for overall excellence in design research was for their work on developing the Principles of Universal Design under a NIDRR-funded Research and Development project. Contact **Mr. Larry Trachtman**, Principal Investigator, at **(919) 515-3082** or **trachtman@ncsu.edu** for additional information.

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The **Maryland Technology Assistance Program (MD TAP)** headed by **Mr. Paul Rasinski**, Executive Director, received the *Print Media Award* from the Maryland Governor's Committee on Employment for Individuals with Disabilities on April 24, 1998. The recognition was for the program's newsletter *Tapping Technology.* For more information, please contact **Louise Calderan** at **(410) 485-9486** or by e-mail: **bankston@clark.net**

Pennsylvania's Initiative on Assistive Technology (PIAT) headed by **Dr. Diane Bryen**, Principal Investigator, re[illegible]e *Provider Recognition Award* in October 1997 from the Special Kids Networks, PA Department of Health. The award is given "in recognition of outstanding services that help children with special health care needs and their families make connections that improve their lives."

PIAT also received one of five *Development Grant 1998* awards from the National Council on Aging/Pfizer *Innovations in Caregiving Program.* The $25,000 award will fund a train-the-trainers program which goes hand-in-hand with Pennsylvania's state-funded AT Lending Library. Through the lending library, trainers can borrow equipment for their demonstrations to caregivers of older Pennsylvanians. For additional information, please contact **Amy Goldman**, Project Director, at **(215) 204-3862** or by e-mail: **piat@astro.ocis.temple.edu**

Mr. Kenneth Knorr, Principal Investigator of the **Virginia Assistive Technology System**, received a recognition award from the Virginia Council on Assistive Technology in 1998. The award is for Mr. Knorr's "dedicated work in the successful passage of Virginia's Lemon Law." For futher information please contact **Mr. Joey Wallace** at **(804) 662-9990** or by e-mail: **wallacjf@drsmail.state.va.us**

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Dr. Stanley Ducharme, Co-Director of the **Special Projects and Demonstrations for Spinal Cord Injuries, New England Regional Spinal Cord Injury System** of the Boston University School of Medicine, was elected President of the American Association of Spinal Cord Injury Psychologists and Social Workers in June, 1998. Dr. Ducharme will hold the position for a one-year term that ends in September, 1999. For additional information please contact **Dr. Ducharme** at **(617) 638-7358** or by e-mail: **ducharme@bu.edu**

Dr. Paul R. Meyer, Jr., Principal Investigator of the **Midwest Regional Spinal Cord Injury Care System** at Northwestern University, received the *Lifetime Achievement Award* from the American Spinal Injury Association (ASIA) on April 20, 1998 for a lifetime of superior work in the field of spinal cord injury. For additional information, contact ASIA at **(312) 908-1242**.

Two papers presented by the **Regional Spinal Cord Injury Center of Delaware Valley** at Thomas Jefferson University, headed by Principal Investigator **Dr. John F. Ditunno, Jr.**, received top honors at the 24th Annual Scientific Meeting of the American Spinal Injury Association (ASIA) held April 20-22, 1998. Acorda Therapeutics conferred only two awards for excellence in research in SCI at the annual meeting. The first paper entitled "Early Prediction of Upper Extremity Motor Recovery in Tetraplegia: Results of a 10 Year Multicenter Study" was written by **John F. Ditunno, Jr., MD**; **Michelle Cohen, PhD**; and **Walter Hauk, PhD**. The second paper, "Bladder Smooth Muscle Isoactin Gene Expression in the Rat Model of Spinal Cord Injury," was written by **David Rivas, MD**; **Michael Chancellor, MD**; and **Patrick Shenot, MD**. For additional information, please contact **Mary Call** at Thomas Jefferson University Hospital; 132 S. 10th Street, 375 Main Building; Philadelphia, PA 19107.

Dr. Kristjan T. Ragnarsson, Principal Investigator of the **Mount Sinai Spinal Cord Injury Model System**, was named as one of *"The Best Doctors in New York"* by *New York Magazine* in its June 8, 1998 issue. To put together a new list of the city's best doctors, *New York* teamed up with Castle Connolly Medical, a research and publishing firm that annually surveys the New York medical community and publishes a popular guide, *How to Find the Best Doctors: New York Metro Area.* **Dr. Ragnarsson** was identified under the "Rehabilitation" heading. The article is available online at *New York Magazine's* Web site: <http://www.nymag.com/This_Week/view.asp?id=1510> Contact **Dr. Ragnarsson** at **(212) 241-9654**.

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NIDRR Grantees and Staff Receive Recognition

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Dr. Susanne Bruyere, Principal Investigator of Cornell University's **Four-Year Research and Demonstration Project to Address Ways to Improve the Employment Practices Covered by Title I of the Americans with Disabilities Act (ADA)** received the *George N. Wright Distinguished Contribution to Rehabilitation Psychology Award.* The University of Wisconsin-Madison Alumni Association of the Rehabilitation Psychology Department conferred the award in March, 1998 for her lifetime contributions to the field. **Dr. Bruyere** is also a Co-Principal Investigator for the recently-funded **RRTC on Employment and Disability Policy**. For additional information, contact **Dr. Bruyere** at **(607) 255-7727** or by e-mail: **smb23@cornell.edu**

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Dr. David Krebs, Principal Investigator of the **Quantitative Assessment of Rehabilitation for Patients with Cerebellar Dysfunction** project, Massachusetts General Hospital Corporation, received the *Marian Williams Award* in June, 1998. The American Physical Therapy Association presented the award for Dr. Krebs' "sustained and outstanding physical therapy research that made a meaningful contribution to the scientific basis of physical therapy." For further information please contact **Dr. Krebs** at **(617) 726-8016** or by e-mail: **krebs@helix.mgh.harvard.edu**

Dr. Alexis Davis Henry, ScD, ORT/L, Co-Principal Investigator of the **Parenting Options Project: A Development Project for Parents with Psychiatric Disabilities** (University of Massachusetts Medical School), received the 1998 *Early Career Research Award* from the International Association of Psychosocial Rehabilitation Services (IAPSRS) on June 18, 1998. The award recognizes her outstanding recent efforts and anticipates her future contributions to ...ch, promoting the psychosocial rehabilitation of persons with severe psychiatric disabilities. For more information, please contact **Mary Huggins**, Chair, IAPSRS Awards Committee, at **(410) 730-7190** or by fax at (410) 730-5965.

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Denise Poston, a Doctoral student and Research Assistant with the **Rehabilitation Research Training Program** at the University of Kansas, received the 1997-1998 *Dahlke Memorial Scholarship* from the Department of Education/Special Education for furthering inclusion and quality of life for students with disabilities. **Dr. Ann Turnbull** is the Principal Investigator of the project. Please contact **Denise Poston** at **(785) 864-7603** for more information.

Two Predoctoral Fellows from the **Rehabilitation Research Training in Physical Therapy** project at Texas Women's University were recognized by the American Physical Therapy Association (APTA) for their research efforts. **Dr. Elizabeth J. Protas** served as the Principal Investigator of the training project.

- **Denise M. Fredette**, MS, PT, received the *Geriatric Fellowship Award* from the Geriatric Section of the APTA for Research in Health Promotion with Seniors in 1998. For further information about the Fellowship, contact the Geriatric Section of APTA at (800) 999-2782.
- **Deborah Roberts-Warrior** received the *Mary McMillan Doctoral Scholarship Award* from the APTA for outstanding doctoral students on May 31, 1998. For more information about the award, please contact the APTA at (800) 999-2782.
- **Julie Pauls**, also a Predoctoral Fellow from the **Rehabilitation Research Training in Physical Therapy** project, received the 1998-99 Fellowship in Women's Health from TWU to develop research on woman's health related to physical therapy. Please contact **Dr. Carolyn K. Rozier**, Dean of the School of Physical Therapy, at **(940) 898-2460** for additional information.

How To Contact The National Center For The Dissemination Of Disability Research

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At a Glance

A WORD FROM THE DIRECTOR

Collaboration in NIDDR's Employment Research

Employment is an important factor in the lives of many people. While much has been known about employment, limited ability to significantly and permanently improve employment opportunities for America's community of people with disabilities has been demonstrated over time. Research has been funded by NIDRR to study, develop new concepts, and propose improvements in selected areas influencing employment, including policy, assessment, services, assistive technology, and medical rehabilitation. In 1998, as described in the priorities for several new Rehabilitation Research and Training Centers (RRTCs), NIDRR implemented a new initiative addressing ment-related issues.

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The Unemployment of Americans with Disabilities

Special Employment Issue

On the eve of the new millennium, the Dow Jones average has topped 10,000 points, the nation's February 1999 unemployment rate for labor force participants (those working or actively seeking employment) was 4.4 percent (Bureau of Labor Statistics, 1999), and U.S. business faces a general shortage of qualified workers. Yet, 69.6 percent of the 17.2 million Americans of working age with work disabilities do not participate in the labor force, and 12.3 percent of labor force participants with work disabilities are unemployed and actively seeking employment (Stoddard, Jans, Ripple & Kraus, 1998). A number of issues impact the continued unemployment of Americans with disabilities.

- The current business climate has created the need for educated, highly skilled workers and has introduced technological advances that may improve employment prospects for some adults with disabilities through work arrangements such as telecommuting and small business entrepreneurships. Nevertheless, a large section of the labor market consists of low-skilled, low-paying service industry jobs where people with disabilities are most likely to find employment (Hayward & Tashjian, 1996).
- The Americans with Disabilities Act of 1990 (ADA) was initially welcomed as a vehicle through which people with disabilities would be able to access employment opportunities, yet people with disabilities continue to report widespread discrimination when seeking employment (DiLeo, 1998). However, the Equal Employment Opportunity Commission (EEOC) reported only 79 cases of litigation in the area of employment hiring discrimination under Title I of the ADA during the period from 1993 to March 1998 (EEOC, 1998).
- Title I of the ADA requires employers to provide reasonable workplace accommodations for employees with disabilities to perform essential job functions. In response to this requirement, and to enhance productivity, employers are developing an array of

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A WORD FROM THE DIRECTOR

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NIDRR embraced a "new" paradigm of disability by focusing on the role of the built and social environments in the creation of barriers to the full and free participation of individuals with disabilities in their communities. In terms of NIDRR-supported employment research, analysis of this interaction targets potential barriers to employment, such as transportation, accommodations, attitudes, or social policies and programs.

This focus on employment research was further expanded in the draft of NIDRR's *Long-Range Plan* for 1999-2004, which promotes the impact of research in improving employment outcomes for persons with disabilities. The major directions of future employment-related research highlighted in the draft *Long-Range Plan* address employment economic policy, community-based employment services, state service systems, workplace supports, and school-to-work transition. These serve as the bases of priorities for six newly-funded employment-focused RRTCs.

John D. Westbrook, Ph.D.
Director, NCDDR

The Unemployment of Americans with Disabilities

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workplace supports to maintain adults with disabilities on their jobs, support them on new jobs, or return them to work following their accident or injury. Positive examples of workplace supports need to be further developed and shared across employers if job opportunities are to be expanded (*Federal Register,* 1998a).

- During the past decade the number of persons receiving cash benefits from Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) has increased by 67 percent. The Social Security Administration (SSA) has paid approximately $72 billion annually to eight million recipients (Coelho, 1997). The structure of SSA benefits and work incentives is often perceived as inadequate to address concerns about income security and the potential loss of medical coverage (T.A. Alliance, 1998). The issue of medical coverage is particularly important because fewer than half of all adults with a severe disability have private health insurance (McNeil, 1997).
- There are nearly 7,000 Community Rehabilitation Programs (CRPs) serving approximately 800,000 adults with disabilities per day with funding from State vocational rehabilitation agencies, often in combination with other sources (Menz, 1995). The functions of CRPs are likely to change as the Rehabilitation Act Amendments of 1998 and new Department of Labor Welfare-to-Work programs are initiated. These and other legislative and policy changes, such as the proposed Work Incentives Improvement Act of 1999, may result in the reimbursement of CRPs for individual employment outcomes rather than payment for services that may or may not lead to employment. Additionally, expanded consumer choice of employment services and outcomes may lead CRPs to develop new service delivery models with the ensuing

We need jobs as much as anybody—more, when you consider how expensive disability is. We need to be needed, and we definitely want to prove that we are as productive as anyone. Still, we're one of the great unemployed minorities. In some disabilities, the unemployment rate is as high as 75 percent. Not because we're not looking for jobs, but because we're not getting them.

Braunstein, 1998

The Research Exchange, a newsletter to promote the effective dissemination and utilization of disability research outcomes, is published quarterly by the National Center for the Dissemination of Disability Research (NCDDR) which is operated by the Southwest Educational Development Laboratory (SEDL). Neither SEDL nor the NCDDR discriminate on the basis of age, sex, race, color, creed, religion, national origin, sexual orientation, marital or veteran status, or the presence of a disability. SEDL is an Equal Employment Opportunity/Affirmative Action Employer and is committed to affording equal employment opportunities for all individuals in all employment matters. The contents of this newsletter were developed under a grant (#H133D50016) of $559,986 from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education (ED). However, these contents do not necessarily represent the policy of SEDL, NIDRR, or the ED; do not assume endorsement by the Federal Government.

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need to evaluate the efficacy of various models to maximize employment outcomes. Together, these changes are likely to promote competition and innovation in employment service delivery.

- Many people with disabilities are enrolled in vocational and non-vocational day services that are primarily funded by State mental health and developmental disabilities agencies using State, Medicaid, and other sources (Wehman, Revell & Kregel, 1998). In a national projection of over one million people enrolled in State developmental disabilities-funded day services (including many at CRPs) approximately 20 percent of the people were in individual community competitive and supported employment, while 80 percent were enrolled in traditional group employment, sheltered workshops, and nonvocational adult day programs (McGaughey, Kiernan, McNally, Gilmore & Keith, 1995). These and other data (Kregel & Wehman, 1989; Wehman, Revell & Kregel, 1998) identified an increase in the number of people in individual community employment since the Federal initiation of supported employment in 1984. However, there also has been continued growth in the number of people enrolled in traditional services (Wehman & West, 1996), with approximately 65,000 people with developmental disabilities on waiting lists for vocational and nonvocational day services (DiLeo, 1998).
- Changes in the labor market have increased the importance of post-high school education. The nation's postsecondary institutions have experienced a tripling of the percentage of students reporting a disability in recent years (the largest growth is in students with learning disabilities). The academic and subsequent career success of these students may depend on the educational and personal supports they receive in two and four year colleges, adult literacy programs, General Equivalency Diploma preparation, and trade schools (*Federal Register*: 1998a).

The Employment Emphasis in NIDRR's Proposed Long-Range Plan

In the *Notice of Proposed Long-Range Plan for Fiscal Years 1999-2004* (*Federal Register,* 1998b) NIDRR provides a vision for research activities in the next five years. This Long-Range Plan is based on a "New Paradigm of Disability" where disability lies not solely with the person's physical/mental status or limitations but with: "an interaction between characteristics (e.g. conditions or impairments, functional status, or personal and social qualities) of the individual and characteristics of the natural, built, cultural, and social environments. The construct of disability is located on a continuum from enablement to disablement. Personal characteristics, as well as environmental ones, may be enabling or disabling, and the relative degree fluctuates, depending on condition, time and setting." (p. 57192)

Consistent with the "New Paradigm" is NIDRR's purpose in supporting employment research to:

1. Assess the impact of economic policy and labor market trends on the employment outcomes of persons with disabilities;
2. Improve the effectiveness of community-based employment service programs;
3. Improve the effectiveness of State employment service systems;
4. Evaluate the contribution of business practices and workplace supports to the employment outcomes of persons with disabilities; and
5. Improve school-to-work transition outcomes. (p. 57201)

Future NIDRR-funded employment research will depart from a previous emphasis on specific disabilities, service systems and service quality to focus on labor market, environmental, and economic issues that impact the employment of people with disabilities. This research focus will address:

- *Labor market issues* including "SSA reform; restructured funding and payment mechanisms, including the use of vouchers; the impact of workforce consolidation; radical restructuring of employment training services at State and local levels; employment-related needs of unserved and underserved groups; linkage of health insurance to either jobs or benefit programs; and transition from school to work among youth with disabilities." (p. 57200);
- *Environmental concerns* by investigating individual workplace supports that make work more accessible through designing and adapting built environments, material adaptations, human supports (employment specialist and coworker supports), and through strategies for assisting individuals in acquiring work skills and improved job flexibility; and
- *Economic issues* through research on a variety of business and employee incentive plans, labor force projections and analyses, and analyses of business practices, business roles and perspectives, and motivational systems.

The Federal Initiative to Increase Employment of People with Disabilities

The Federal government has launched a multifaceted initiative to deal with the discrepancies in employment levels among workforce participants overall, those with disabilities, and all working age people with disabilities. A combination of new legislation and programs will address issues in the employment of adults with disabilities.

This initiative takes place in an environment where American business is experiencing an economic surge, jobs in a variety of fields are available, and the employment abilities of people with disabilities have been well-documented over the past three decades (e.g. Williams, Brown & Certo, 1975; Gold, 1980; Wehman & Hill, 1980; Wehman, Kregel & Seyfarth, 1985; Wehman, Hill, Wood & Parent, 1987; Wehman & West, 1996). These factors provide opportunities to revise and renew employment efforts, take new directions, and form positive partnerships in addressing employment opportunities for people with disabilities.

One component of the Federal employment initiative is the funding of six new employment-focused **Rehabilitation Research and Training Centers (RRTCs)** by the National Institute on Disability and Rehabilitation Research (NIDRR). The new employment-focused RRTCs will address NIDRR research priorities in Disability and Employment Policy, State Service Systems, Community Rehabilitation Programs, Workplace Supports, and Postsecondary Educational Supports.

The new employment-focused RRTCs will work cooperatively with new and existing Federally-sponsored efforts to positively impact the employment of people with disabilities. These include:

1. The Presidential Task Force on Employment of Adults with Disabilities, initiated in March of 1998 (Clinton, 1998)
2. The Workforce Investment Act of 1998 including The Rehabilitation Act Amendments of 1998
3. Social Security Administration Demonstration Projects
4. Department of Labor Welfare-to-Work Grants

The purpose of the program is to put people to work. Not get ready to work; not talk about work, going to work, or think about work; not services, but work.

State Vocational Rehabilitation Administrator
(Whitney-Thomas & Thomas, 1996)

1 Presidential Taskforce on Employment of Adults with Disabilities

In March of 1998, President Clinton announced the Presidential Task Force on Employment of Adults with Disabilities "in order to increase the employment of adults with disabilities to a rate that is as close as possible to the employment rate of the general adult population" (Clinton, 1998). The Task Force is Chaired by Alexis Herman, Secretary of Labor. Tony Coelho, Chair of the President's Committee on Employment of People with Disabilities, serves as Vice Chair. Members include: Secretaries from the Departments of Treasury, Commerce, Transportation, Health and Human Services, Education, and Veteran's Affairs; Administrators of the Small Business Administration, Social Security Administration, and the Office of Personnel Management; and Chairs of the National Council on Disability and the Equal Employment Opportunity Commission (Clinton, 1998).

The Task Force will focus on ten tasks that directly coincide with the priorities of the new employment-focused RRTCs. In discussing this connection, Becky Ogle, Executive Director of the Presidential Task Force, described the RRTCs as "extremely timely research programs that will provide the Presidential Task Force with scientific information supporting current and future federal policies in the employment of adults with disabilities" (B. Ogle, personal communication, October 28, 1998).

For more information contact:
Presidential Task Force on the Employment of Adults with Disabilities
U.S. Department of Labor
200 Constitution Avenue, N.W.
Suite S-2312
Washington, D.C. 20210
Telephone numbers:
(202) 219-6081 X 154
TTY (202) 219-0012
E-mail address: <ptfead@dol.gov>
<http://www2.dol.gov/dol/_sec/public/programs/ptfead/main.htm>

2 Workforce Investment Act of 1998

In September, 1998, President Clinton signed the Workforce Investment Act. This legislation consolidates a large number of Federally-funded programs into three State block grants including Adult Employment and Training, Disadvantaged Youth Employment and Training, and Adult Education and Family Literacy. Under these block grants "one-stop shops" or Workforce Development Centers will be established to provide job seekers with a wide range of services previously provided by separate agencies. A major portion of the Workforce Investment Act includes the Rehabilitation Act Amendments of 1998 which: (a) continue vocational rehabilitation as a separate State agency; (b) provide for the development of an Individual Plan of Employment (IPE) to replace the IWRP for each eligible person with a disability; (c) presume eligibility for all persons who receive SSI or SSDI; and (d) require that all eligible individuals receive information and referral services to the one-stop State Workforce Development System to help them prepare for, secure, retain, or regain a job.

The new employment-focused RRTCs will conduct research on the impact of this legislation on State vocational rehabilitation services and on community rehabilitation programs (CRPs). They also will be developing research-based training materials for Rehabilitation Continuing Education Programs (RCEPs) and disseminating research information to the Council of State Administrators of Vocational Rehabilitation (CSAVR).

For additional information contact:
Rehabilitation Services Administration
600 Independence Ave., SW
Washington, D.C. 20202
(202) 205-5482/TDD 5538
For a text or PDF copy of the Workforce Investment Act:
<http://www.gpo.gov/nara/nara005.html>

3 Social Security Funds 12 Demonstration Projects

The Social Security Administration has awarded a total of $5.8 million to 12 states to develop innovative projects for assisting people with disabilities in their efforts to reenter the work force. The competitive grants are the first of a five-year $25 million program designed to provide coordinated approaches to increase work opportunities for people with disabilities. The grant projects target SSI and SSDI recipients with emphasis on persons with psychiatric disabilities and other populations that experience barriers to employment. States receiving grants are California, Illinois, Iowa, Minnesota, New Hampshire, New Mexico, New York, North Carolina, Ohio, Oklahoma, Vermont, and Wisconsin.

For additional information, contact:
Social Security Administration
Altmeyer Bldg.
6401 Security Blvd.
Baltimore, MD 21235
800-772-1213/V
800-325-0778/TTD
<http://www.ssa.gov/>

Source:
President's Committee for the Employment of People with Disabilities, 1998
<http://www50.pcepd.gov/pcepd/washfax/wfaxlist.htm>

4 Department of Labor Announces New Welfare-to-Work Grants

On January 26, 1999 the U.S. Department of Labor (DOL), Employment and Training Administration (ETA) announced Round Three in a series of grant competitions to provide employment assistance for hard-to-employ recipients of Temporary Assistance for Needy Families (TANF), and certain non-custodial parents, to move into lasting unsubsidized jobs. Approximately $240 million will be available through these grants to fund projects that will typically range from $1 million to $5 million during a maximum 36 month period. The grants will be provided to employment services for people with disabilities, victims of domestic violence, persons with limited English proficiency, noncustodial parents, and persons with substance abuse problems. Grantees are to work with Private Industry Councils (PICs) or political subdivisions of State government to provide a set of employment placement, training, and support activities to achieve unsubsidized employment. **The closing date for applications is April 30, 1999** (*Federal Register,* 1999).

Several of the new employment-focused RRTCs are researching the impact of DOL programs on employment of people with disabilities, particularly the Welfare-to-Work Initiative (WtW), Temporary Assistance for Needy Families (TANF), and DOL programs at one-stop centers. Funding under WtW Round Three will potentially expand the RRTCs' studies to programs that provide employment opportunities for people with disabilities funded by this competition.

For additional information, contact:
Regional Department of Labor offices:

Boston	617-565-2270
New York	212-337-2145
Philadelphia	215-596-6374
Atlanta	404-562-2109
Chicago	312-353-1937
Dallas	214-767-2154
Kansas City	816-416-3796, ext. 226
San Francisco	415-975-4655
Seattle	206-553-5642, ext. 8031

More information:
The DOL Employment and Training Administration Web Site <http://wtw.doleta.gov/> provides access to the Welfare-to-Work Competitive Grants Notice (1/26/99):
<http://wtw.doleta.gov/documents/wtwsga3.htm> (text version)
<http://wtw.doleta.gov/documents/wtwsga3.pdf> (PDF version)

The New Employment-Focused RRTCs

The new employment-focused Rehabilitation Research and Training Centers are undertaking a variety of research projects that are consistent with the "New Paradigm of Disability" and NIDRR's purpose and focus for research on the employment of people with disabilities. Following are brief introductions to the six new employment-focused RRTCs and their research projects.

Rehabilitation Research and Training Center for Economic Research on Employment Policy for Persons with Disabilities ($700,000 per year)

Cornell University
Program on Employment and Disability
School of Industrial and Labor Relations
106 ILR Extension Building
Ithaca, NY 14853-3901

PRINCIPAL INVESTIGATORS

Susanne Bruyère, Ph.D. and Richard Burkhauser, Ph.D. at Cornell University, and David Stapleton, Ph.D. at The Lewin Group, Fairfax, VA

CONTACT PERSON

Susanne Bruyère, Ph.D., (607)255-7727
<smb23@cornell.edu>
<http://www.ilr.cornell.edu/rrtc>

RESEARCH PROJECTS INCLUDE

1. Analysis of the current employment status of persons with disabilities using existing longitudinal data.
2. Longitudinal analysis of the effects of labor market change on the employment and earnings of people with disabilities.
3. Longitudinal analysis of return to work after the onset of a disability.
4. Longitudinal analysis of the impact of civil rights protections on the employment and earnings of people with disabilities.
5. Identification and analysis of policies that foster or impede the participation of transitioning students in rehabilitation or employment service programs.

Dr. Susanne Bruyère, Project Director, said "the Cornell center will study the role of the economy, public policies, and other environmental factors on the employment and economic self-sufficiency of persons with disabilities" (S. Bruyère, personal communication, October 29, 1998).

Rehabilitation Research and Training Center on Workforce Investment and Employment Policy for Persons with Disabilities ($450,000 per year)

Community Options, Inc.
1130 17th Street, NW, Suite 430
Washington, DC 20036

PRINCIPAL INVESTIGATOR

Michael Morris

CONTACT PERSON

Michael Morris, (202) 721-0120
<coisvp@aol.com>
<http://www.coptions.com/>

RESEARCH PROJECTS INCLUDE

1. Development of a policy matrix with critical variables in a post-ADA environment to analyze the relationship between select State and Federal policies upon the employment of persons with disabilities.
2. Analysis of targeted State policies and practices regarding the implementation of the Temporary Assistance for Needy Families (TANF) program and the Workforce Investment Act consistent with ADA and Section 504 requirements of equal access and opportunity.
3. Analysis of selected State efforts to implement work incentive systems change grants from the Social Security Administration to identify barriers and facilitators to improved work status of persons with disabilities and the critical linkage to access to affordable health care.
4. Analysis of policy-based implications of outcome-based reimbursement and customer direction and control on the delivery of employment and rehabilitation services to persons with disabilities.
5. Analysis of case studies of small and large businesses of the effect of civil rights protections and multiple environmental factors on promoting or depressing the employment status of persons with disabilities.

Director Michael Morris states that the RRTC "will analyze public policies that increase or decrease the employment of people with disabilities" (M. Morris, personal communication, October 14, 1998).

Rehabilitation Research and Training Center on State Systems and Employment ($700,000 per year)

Children's Hospital
Institute for Community Inclusion
300 Longwood Ave.
Boston, MA 02115

PRINCIPAL INVESTIGATOR

William E. Kiernan, Ph.D.

CONTACT PERSON

John Butterworth, Ph.D. (617)355-7074
<butterworth@a1.tch.harvard.edu>
<http://www.childrenshospital.org/ici/programs/research/rrtc/>

RESEARCH PROJECTS INCLUDE

1. Survey of State systems, survey of business experiences with state systems, study of local workforce consolidation efforts, study of training intervention focused on building interagency collaboration.
2. Case studies of innovative state practices in collaboration, inclusion of people with disabilities in systems planning, and access to career centers. Study of local service policies related to outcomes and study of training intervention on access to career centers.

3. Survey of state management information systems, study of individual outcomes, profile of state employment outcomes, development of predictive modeling of employment outcomes, and secondary analysis concerning return to work for SSI and SSDI recipients.
4. Study of individual consumer experiences with employment services, study of networking intervention in job search, longitudinal study of SSI and SSDI recipients.

Dr. William Kiernan, Director, states that the RRTC will study "how national, State, and local service systems can work more effectively together to support a disabled person's choices in their employment options" (W. Kiernan, personal communication, October 14, 1998).

Rehabilitation Research and Training Center on Community Rehabilitation Programs (CRPs) to Improve Employment Outcomes ($700,000 per year)

University of Wisconsin-Stout
Research and Training Center/SVRI
Menomonie, WI 54751

PRINCIPAL INVESTIGATOR
Daniel C. McAlees, Ph.D.

CONTACT PERSON
Frederick E. Menz, Ph.D., (715) 232-2236
<menz@uwstout.edu>
<http://www.rtc.uwstout.edu/>

RESEARCH PROJECTS INCLUDE

1. Determination of the scope, capacity, and resources available through CRPs nationally and as these programs may systematically serve the rehabilitation needs and employment outcome needs of persons with disabilities.
2. Determination of differential benefits for consumers served through alternate funding sources in terms of services, choice, costs, and outcomes achieved.
3. Determination of current practices and increasing capacity of CRPs to provide services in keeping with informed consumer choice.
4. Determination of how Federal and State legislation affects the capacity of CRPs to serve rehabilitation and employment needs of people with disabilities.
5. Measurement and estimation of the extent to which CRPs yield important rehabilitation and quality employment outcomes.

Associate Director Dr. Fred Menz states that the RRTC will "conduct field-based research to investigate community rehabilitation efforts designed to help people with disabilities obtain and maintain employment" (F. Menz, personal communication, October 13, 1998).

Rehabilitation Research and Training Center on Workplace Supports ($699,992 per year)

Virginia Commonwealth University
P.O. Box 980568
Richmond, VA 23284-0568

PRINCIPAL INVESTIGATOR
Paul Wehman, Ph.D.

CONTACT PERSON
Mike Barcus, (804) 828-1851
<jbarcus@saturn.vcu.edu>
<http://www.worksupport.com/>

RESEARCH PROJECTS INCLUDE

1. Analysis of workplace supports and business profitability, determination of the progression of disability benefits, measurement of the cost of workplace supports.
2. Determination of the effectiveness of disability management, analysis of the differential impact of disability management strategies.
3. Analysis of the longitudinal impact of workplace supports, evaluation of supported employment as a workplace support, determination of the long-term effects of workplace interventions.
4. Analysis of structural changes in the American economy, evaluation of self-employment for persons with disabilities, analysis of the impact of economic trends on persons with disabilities.
5. Analysis of employer perspectives on obstacles to employment, identification of obstacles to employment, measurement of the effectiveness of a coordinated information program.
6. Study of the elimination of disincentives to employment, study of the application of decision support principles to benefits counseling, study of the application of decision support technology to the employment of people with disabilities—a model for small business.

Mr. Mike Barcus, Director of Training, describes the RRTC's work as "building bridges between people with disabilities and business by developing the supports necessary to obtain and maintain successful employment" (M. Barcus, personal communication, October 13, 1998).

National Center on the Study of Postsecondary Educational Supports ($595,000 yr. 1: $600,000 yrs. 2-5)

University of Hawaii
UA 4-6, 1776 University Ave.
Honolulu, HI 96822

PRINCIPAL INVESTIGATOR
Robert Stodden, Ph.D.

CONTACT PERSON
Audray Holm, (808) 956-3975
<audrayh@Hawaii.edu>
<http://www.rrtc.Hawaii.edu/>

RESEARCH PROJECTS INCLUDE

1. Study of the current status of educational supports.
2. Identification of effective support practices and models of delivery that contribute to successful access.
3. Identification of specific barriers to the provision of disability-related services, including policy and funding requirements.
4. Assessment of the effectiveness of promising educational practices and disability-related services that are important to career mobility and success in the workplace.

Dr. Bob Stodden, Director, states that the RRTC will "investigate ways to strengthen the educational supports that students with disabilities need to attain success in their employment goals" (R. Stodden, personal communication, October 15, 1998).

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The New Employment-Focused RRTCs, *continued*

Collaborative Activities

The new employment-focused RRTCs have identified a variety of stakeholders including policy makers, government officials, funding agencies, service providers, disability organizations, educators, business organizations, and individual adults with disabilities. Partnerships with key stakeholders are taking shape through initial planning meetings, development of participatory action research (PAR) strategies, collaborative research and data gathering, evaluation of results, and through developing channels for distribution and use of research results. Several of the RRTCs will use stakeholder focus groups in designing dissemination strategies and formats. The RRTCs are also working with stakeholders in developing an array of electronic communication mechanisms to assist collaboration and dissemination activities.

These partnerships provide the new employment-focused RRTCs with readily accessible audiences for dissemination activities and products. The RRTCs will provide Federal and State legislators with supporting information for new legislation and will provide the Presidential Task Force on Employment of Adults with Disabilities and its constituent agencies with informational support for new employment policies. Business leaders from such organizations as the U.S. Chambers of Commerce and the Society of Human Resource Managers (SHRM) are participating in research activities and will be reviewing research results for inclusion in their publications. Disability organizations such as PACER Center, the Association for Persons in Supported Employment, and the National Association for the Deaf are also participating in RRTC research and dissemination efforts.

Some research areas, such as transition from school to work, are addressed by more than one RRTC using differing research methods and perspectives. These common areas provide opportunities for collaboration among RRTCs to gain a broader picture of employment issues, such as research on transition policy changes and individual transition outcomes. To facilitate this collaboration, and avoid duplication, the RRTCs are planning a number of forums and conferences to share research information.

On December 16, 1998 representatives from the six employment-focused RRTC's, plus the American Indian Rehabilitation Research and Training Center (AIRRTC), met in Washington, D.C. This meeting also included NIDRR staff and representatives from the Rehabilitation Services Administration, the Presidential Task Force on Employment of Adults with Disabilities, the Social Security Administration, the Office of Special Education and Rehabilitation Services (OSERS), the U.S. Department of Education, the U.S. Department of Labor, and the NCDDR. Presentations by the RRTCs and others were followed by a discussion about collaboration, coordination, access to data, and future meetings. The next meeting of the employment-focused RRTCs was tentatively planned for April, 1999, with the potential for developing regularly scheduled meetings throughout the five year grant period.

The new Rehabilitation Research and Training Centers will be national centers of excellence where collaborative interdisciplinary studies address the current and emerging employment design needs of policy makers, employers, people with disabilities and their families.

Dr. Katherine D. Seelman
NIDRR Director
personal communication
October 21, 1998

The Dissemination and Utilization Process and Employment Research

The NCDDR has previously presented a model for illustrating the key elements of dissemination and knowledge utilization (Westbrook & Boethel, 1996; Westbrook, 1998). The new employment-focused RRTCs' dissemination activities and products, described in their proposals, are discussed in relation to this model.

Source

The new employment-focused RRTCs and their organizations have extensive experience in providing high quality research and/or services in the employment of people with disabilities. They are increasing their credibility through collaboration with other RRTCs, universities, business organizations, and private sector research organizations such as the Lewin Group. Their previous efforts have added considerable new knowledge to the field in such areas as customer-driven supported employment, accessing Social Security Work Incentives, community job development strategies, and employment models for community rehabilitation programs (CRPs).

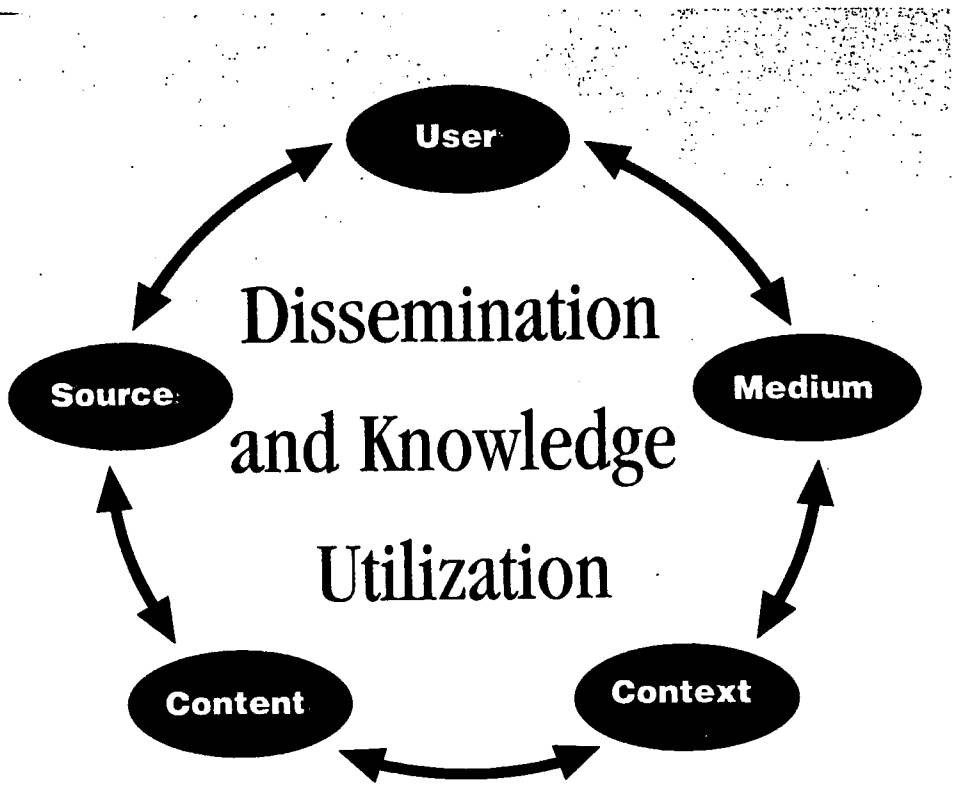

Figure 1. Relationship of Key Elements of Dissemination Leading to Knowledge Utilization (Westbrook, 1998, p. 14)

Content

The new employment-focused RRTCs will be developing a variety of content intended to support new legislation, support new Federal and State policies, influence service designs, and promote the employment of people with disabilities. Their dissemination plans include systematic attempts to design research content for specific applications and audiences with the objective of achieving utility and relevance to the informational needs of a variety of stakeholders.

Medium

The new employment-focused RRTCs will be presenting their research information using a variety of media including:

- *Brochures, newsletters, and brief reports.* The widespread mailing of these publications introduces stakeholders to the new employment-focused RRTCs by emphasizing research needs, activities, and results. They may also provide ongoing information about research and training events, with commentary about issues and similar research/training. One Center will be providing policy notes on data that follows ongoing improvements in the employment status of a group of adults with disabilities.
- *Popular, professional, and disability media.* Several of the new employment-focused RRTCs will submit information to popular print media for distribution to the general public. RRTCs will frequently provide information for inclusion in the newsletters of professional organizations. One Center will be highlighted on the national radio talk show "On a Roll" (Smith, 1998). Also, RRTCs will submit research information to a variety of disability publications and information resources such as disability Web Sites, agency publications, and inter-agency correspondence.

  Submissions to popular print and electronic media, and to major disability publications such as *We, En•a'ble, Ability, New Mobility,* and *Ragged Edge* magazines, should elicit the interest of the editor and achieve the perception of immediate relevance to readers. Although such media may present disability research (especially medical research) as stand-alone articles, they are more likely to include research information to support points within human interest-oriented stories. RRTC staff may find themselves working with journalists seeking to clarify key points about research information for their articles or stories.
- *Refereed journals, monographs, books.* Articles in professional journals will provide supporting information for stakeholders as they improve employment policies, services, and practices. Of interest is the extent to which RRTCs submit research information to nondisability publications focusing on business areas, public policy, labor economics, human resources, and labor statistics.

  The new employment-focused RRTCs will independently publish monographs to present their research activities and results. These will be distributed via surface mail, and through text and downloads on the RRTCs' Web Sites. Easy, free access to complete research information in the monographs will serve as a means of getting timely information to other researchers and stakeholders.

  Several of the new employment-focused RRTCs will be developing books about their research topic. If such texts are presented on multiple levels, or perhaps with interpretive guides, both academic and non-academic readers will use the information in improving employment policy, services, and practices.

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- *Topical conferences.* Each of the new employment-focused RRTCs will sponsor one or more conferences on their particular research topic to bring together top researchers and stakeholders to share research information.
- *Electronic information.* The new employment-focused RRTCs are using Internet technology to promote their efforts and share information. RRTCs are making extensive improvements to their Web sites, offering brief reports, articles, monographs, etc. in text and downloads. Some of the Web sites will provide message boards, chat rooms, listservs, and other interactive functions. These developments provide opportunities for stakeholders to immediately access research information, including data and databases, via electronic media.

User

The new employment-focused RRTCs have identified a variety of potential users of research information among stakeholders. For some of these groups and individuals the employment of people with disabilities continues to be a controversial issue (Wehman & West, 1996). To address the varying "readiness to change" (Westbrook & Boethel, 1996) of stakeholders the RRTCs will provide research information in a variety of media and will tailor its content to the informational needs of specific stakeholders. Much of this targeted information will include the context for its use, such as research conducted with CRPs, where the information fits the needs of stakeholders at similar CRPs.

Context

The new employment-focused RRTCs are addressing differing knowledge, values, and environmental contexts by partnering with a variety of stakeholders in research development, implementation, and dissemination. Successful utilization of their research information depends upon the RRTCs providing targeted and freely accessible research information that responds to competing priorities, such as waiting lists for day services; conflicting knowledge and practices in traditional or disability specific programs; the social, political, and economic climates of stakeholders; and stakeholder skills in understanding and applying the research information with varying settings and individuals. The new employment-focused RRTCs will respond to contextual factors through coordinated research efforts that:

- Facilitate collaboration among the RRTCs, NIDRR funded programs, other researchers, and stakeholders;
- Work closely with Federal, State, and community policy makers, and funding sources, in developing new employment policies and funding strategies, particularly outcome-based funding;
- Address a full range of issues such as consumer choice in programs and employment, health benefits, and conflicting purposes of programs funded by Federal, State, and local sources; and
- Utilize a variety of dissemination media and content designed to reach specific stakeholders. Research information will have a strong relationship to current issues/needs in the field. This information will be freely accessible through electronic and print media, and through interactions between RRTC staff and stakeholders.

A Look to the Future

The new employment-focused RRTCs will conduct their research within a multifaceted Federal initiative to improve employment outcomes for people with disabilities. It is unlikely that individual components of this initiative can adequately approach this goal by working in isolation. By providing a variety of freely accessible media and content tailored to the preferences of specific stakeholders, and relevant to their needs, the RRTCs will serve a valued role in providing coordinated research information across all components of the initiative.

The open exchange of research information, including data and databases, is vital to information-sharing and collaboration among the new employment-focused RRTCs and other researchers. Research programs have unique opportunities to use current and emerging electronic and traditional media to provide stakeholders with timely research information. Thus, free and easy access to such information should be viewed by all researchers as a valuable dissemination tool to improve the lives of people with disabilities.

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NIDRR Grantees and Staff Receive Recognition

The NCDDR congratulates each of the following NIDRR grantees and staff members. All grantees are encouraged to contact the NCDDR with information to share in future issues of *The Research Exchange*.

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Staff members of the **RRTC on Secondary Complications of Spinal Cord Injury** of the University of Alabama at Birmingham's Spain Rehabilitation Center received awards and recognition this past year. **Dr. Amie Jackson** is Principal Investigator of the RRTC. For additional information on these items, please contact **Barbara Key** at **(205) 934-3283** or by e-mail: **<key@sun.rehabm.uab.edu>**

- **Ken B. Waites, MD,** microbiologist, was installed as Secretary-General and Member of the Board of Directors of the International Organization for Mycoplasmology (IOM). The IOM is composed of more than 500 microbiologists representing 48 nations, and was founded in 1974 to promote cooperative study of the smallest free-living organisms, dissemination of information useful to the study of mycoplasmal disease, and support of mycoplasmal research. **Dr. Waites** started his two-year term in July, 1998.
- **Michael J. DeVivo, DrPH,** received the *Distinguished Service Award* from the American Association of Spinal Cord Injury Psychologists and Social Workers at their annual meeting in Las Vegas on September 9, 1998.

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The **RRTC on Supported Employment,** (1993-1998, completed and replaced by the **RRTC on Workplace Supports**), was named to the 1998-99 *CASE National Media Fellowship Program* of the Council for Advancement and Support of Education (CASE). The *Fellowship* was awarded for the proposal "Supported Employment: A Model for Moving Individuals with Disabilities into the Workforce." The fellowship, conferred in 1998, is one of 27 awarded for the coming academic year in a variety of disciplines. VCU's fellowship will allow interested reporters to come onto campus to learn more about supported employment. **Dr. Paul H. Wehman** is the Principal Investigator. For additional information, please contact **Teri Blankenship** at **(804) 828-1851**.

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Dr. Sylvia Walker, Principal Investigator of the **Howard University RTC for Access to Rehabilitation and Economic Opportunity (HURTC),** received the *Distinguished Alumni Award* from Queens College, City University of New York, on July 23, 1998, for her contributions to the field of disability research. For additional information, please contact **Dr. Walker** at **(202) 806-8086** or by e-mail: **<swalker@law.howard.edu>**

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Dr. Steven J. Taylor, PhD, Principal Investigator of the **National Resource Center on Supported Living and Choice** (Syracuse University, Center on Human Policy), received a 1998-1999 *Visiting Professorship* at Keio University, Tokyo, Japan. Dr. Taylor taught a summer course on Disability Policy and U.S. Trends, based on NIDRR-funded projects. A monograph based on the course is scheduled for publication (in Japanese). For additional information, please contact **Dr. Taylor** at **(315) 443-3851** or by e-mail: **<staylo01@mailbox.syr.edu>**

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