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ABSTRACT

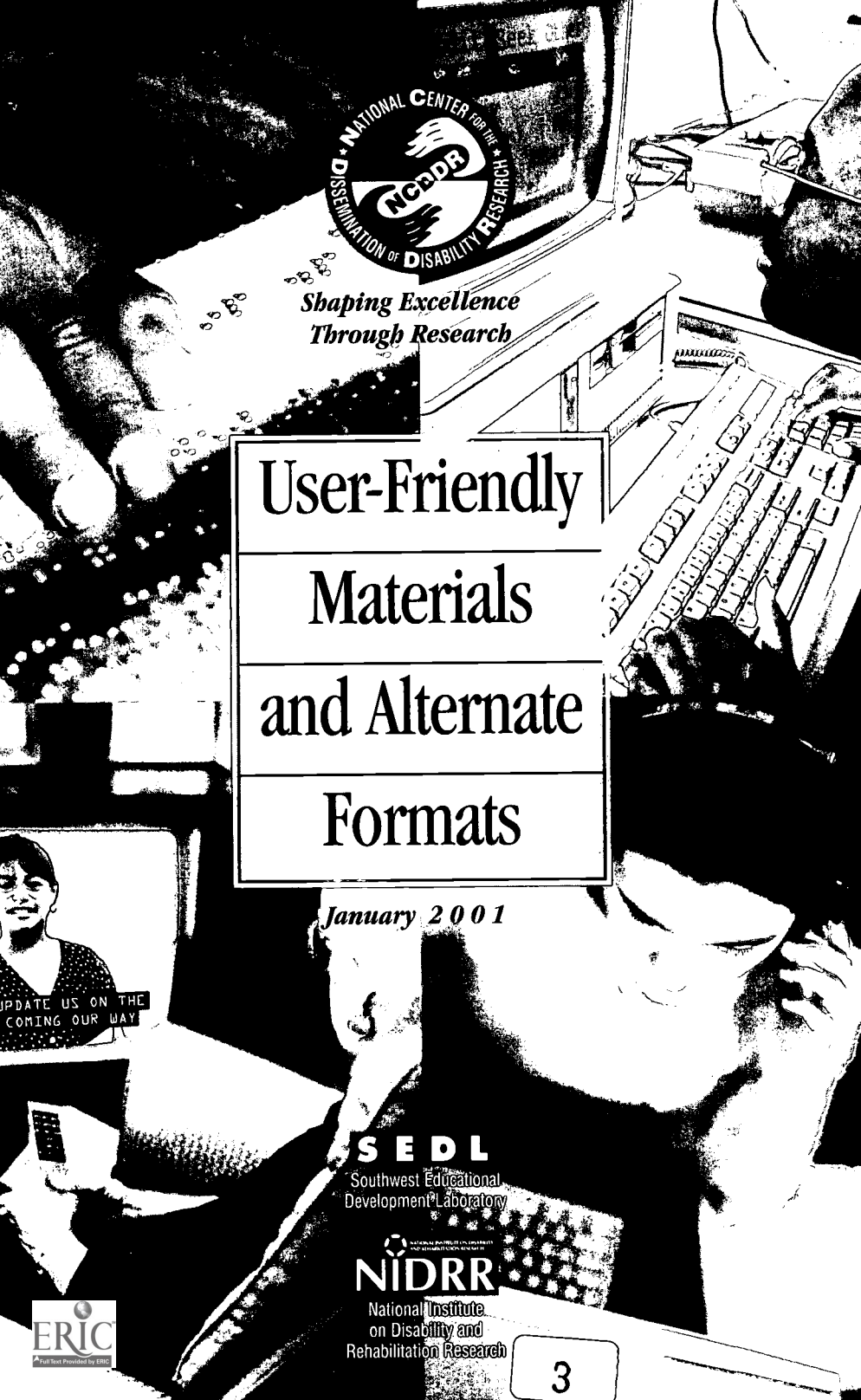
This booklet offers guidance for increasing the dissemination and utilization of information (especially federally funded disability research) through development of user-friendly materials and alternate formats. Individual sections address: the distinction between alternate formats and accessibility, suggested policies to help define approaches to accessibility, development of an organizational dissemination policy, suggested questions to guide format selection, and implementation of a variety of formats and modes including large print, audiotape, Braille, diskette, CD-ROM/DVD, video and descriptive video, captions, and Internet/World Wide Web. Also discussed are other format concerns, the importance of "people first" terminology, and evaluating for user friendliness. A brief report of a consumer survey is reported indicating increasing numbers of individuals with disabilities are turning to the computer as an information source, although printed materials remain the most preferred format. Many Web sites are cited throughout the booklet. (Contains 10 references.) (DB)

NATIONAL CENTER FOR THE DISSEMINATION OF DISABILITY RESEARCH

SHAPING EXCELLENCE THROUGH RESEARCH

USER-FRIENDLY MATERIALS AND ALTERNATE FORMATS

JANUARY 2001


NATIONAL CENTER FOR THE DISSEMINATION OF DISABILITY RESEARCH
NCDDR
Shaping Excellence Through Research
User-Friendly Materials and Alternate Formats
January 2001
UPDATE US ON THE COMING OUR WAY
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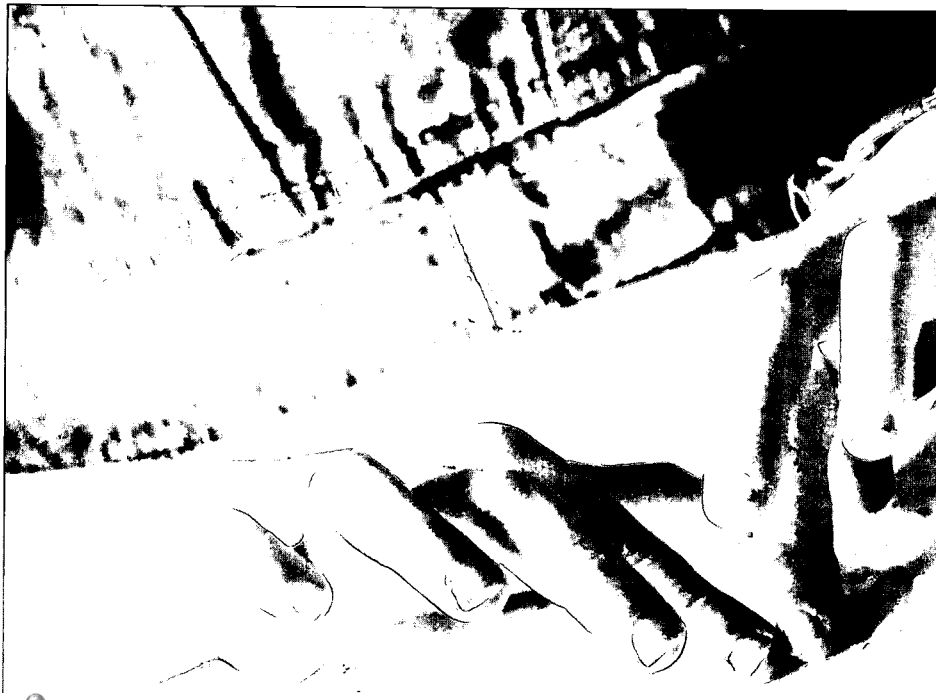
User-Friendly Materials and Alternate Formats

TABLE OF CONTENTS:

Dissemination AND Utilization

The goal of dissemination is utilization: the *use* of the information by an intended audience (or audiences). Attending to user needs early in dissemination planning will help promote the use of information by targeted groups. If dissemination is considered at each step of the research effort, changes can be noted and incorporated as needed. A responsive dissemination plan will result in providing information that user groups want, in user-friendly formats that will promote the plan's use.

What does "user-friendly" mean? Generally, it means something that is designed to be easily understood by people with little previous experience or background. The user must define what is beneficial and understandable. Sharing information from research outcomes in user-friendly formats requires researchers to consider the needs of a variety of audiences. What is 'friendly' to one group may not facilitate or encourage use of the information by a different audience.



Alternate Formats Increase Accessibility of Information

The results of NIDRR-funded research are reported and available to a select audience, primarily other researchers. These results may not be widely accessible to others, including 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 is published in a professional journal — and the accessibility of information — which implies "ease of access and simplicity of use" (Westbrook, 1996).

When you disseminate information for the purpose of utilization, you must be sensitive to the difference between producing an alternate format and providing accessible information. In discussing accessibility, the usual focus is on alternate formats for written materials. The production of alternate formats should not be confused with the accessibility of information. Producing an alternate format does not mean that you have made your information accessible to people with disabilities, if none of your potential users required that format (Westbrook, 1996).

Accessibility of information is determined by the user. Consumers must be able to choose the format or formats that they prefer. Once this is determined, the production of a specific format enhances informed decision-making and accessibility (Westbrook, 1996).

Policies Help Define Approaches to Accessibility

Policies are important opportunities for leaders to describe new ideals and new ways to achieve those ideals. The U.S. Department of Education (ED) has a policy regarding dissemination to people with disabilities. The "Policy Statement on Making Materials and Information Available and Accessible to Individuals with Disabilities" highlights areas that grantees should consider in developing their own policy statements. It can be found on the ED Web site as Appendix D to the *Report on the Section 504 Self-Evaluation—May 1996* at:
http://www.ed.gov/pubs/Sec504/append-d.html

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 (Section 504 of the Rehabilitation Act of 1973, as amended);
- 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 be 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.

[adapted from *The Research Exchange,* Vol. 1, No. 2, 1996]

New standards for the Federal government regarding electronic and information technology were developed as mandated in Section 508 of the 1998 Amendments to the Rehabilitation Act. These will be binding and enforceable standards for technology accessibility that impact all governmental agencies and procurements.

ED's policy will be updated to comply with the new standards. NIDRR grantees and contractors should be familiar with these standards, which can serve as a guideline for accessibility. Information on the final standards, which will go into effect six months after they were published in the *Federal Register* on December 21, 2000, can be found at the following locations on the World Wide Web:

http://www.section508.gov/
http://www.access-board.gov/news/508-final.htm
http://www.access-board.gov/sec508/508standards.htm

The National Library Service for the Blind and Physically Handicapped (NLS) has made available *Guidelines for Accessing Alternative Format Educational Materials* (March 1, 2000). This document by Barbara Nail-Chiwetalure views legislation, navigating the system, and resources.

http://www.loc.gov/nls/guidelines.htm

Develop Your Dissemination Policy

Developing a dissemination policy for your organization can help staff decisions regarding what formats to use by defining the purpose and goals of dissemination activities. A dissemination policy:

- Helps to clarify the value placed upon dissemination by your NIDRR grantee organization.
- Provides an opportunity to consider the impact dissemination, and decisions reached about it, have on the ultimate utilization of your research-based information.
- Facilitates a clarification of the intended groups of users for the information generated through your disability research function.
- Establishes the value and measures that will be engaged to achieve "ease of access and simplicity of comprehension and use"—in other words, accessibility.
- Reduces staff confusion about the correct course of action and, as a result, lowers staff costs and increases timeliness of response time.
- Describes what steps you will take to ensure that the general public is aware of the availability of alternate formats of your material.
- Provides an opportunity to clarify how your dissemination policy facilitates accomplishment of the organization's mission
- Clarifies the extent to which you will communicate your dissemination policy to the public, reinforcing awareness of the availability of accessible, timely information, and technical assistance to support its utilization.
- Provides an opportunity to describe how the success of your dissemination policy will be evaluated and with what frequency it may be modified.

[adapted from *The Research Exchange,* Vol. 1, No. 2, 1996]

A dissemination policy will help focus attention on dissemination needs in other areas, for example, the project budget. Up-front planning will help ensure that funds needed for the most appropriate dissemination formats and modes are identified and incorporated into the project budget. A lack of sufficient budgeted funds is not an excuse for not providing alternate formats.

Questions Can Guide Format Selection

Answering the familiar *Why?, What?, Who?, When?, Where?,* and *How?* questions can facilitate the process of identifying appropriate user-friendly formats.

Why?

- To share information with interested audiences.
- To meet the needs of specific audiences.
- To support the utilization of information.
- To respond to requirements of Section 504 of the Rehabilitation Act of 1973, as amended.

What?

- What formats to use depends in part on what information is to be shared.
- Attention to content and audience (user) will help identify appropriate formats.
- Efforts to implement the concepts of universal design will guide what formats to use.
- Different levels may be needed to reach different audiences.
- Some information has immediate, short-term use, and a simple format is best.
- Information that can best be shared through a demonstration, such as a video, may require additional effort to ensure accessibility (captions, descriptions).

Who?

- Identify potential audiences early in the process and incorporate their input.
- It is important to identify resources to develop special formats such as Braille, captioning and descriptions for videos.
- Recognize that cultural and linguistic differences will impact audience preferences.
- Collaborate with other researchers, including other grantees, who may have successfully used a specific type of format.
- Working together with other researchers may be a more effective use of resources.

When?

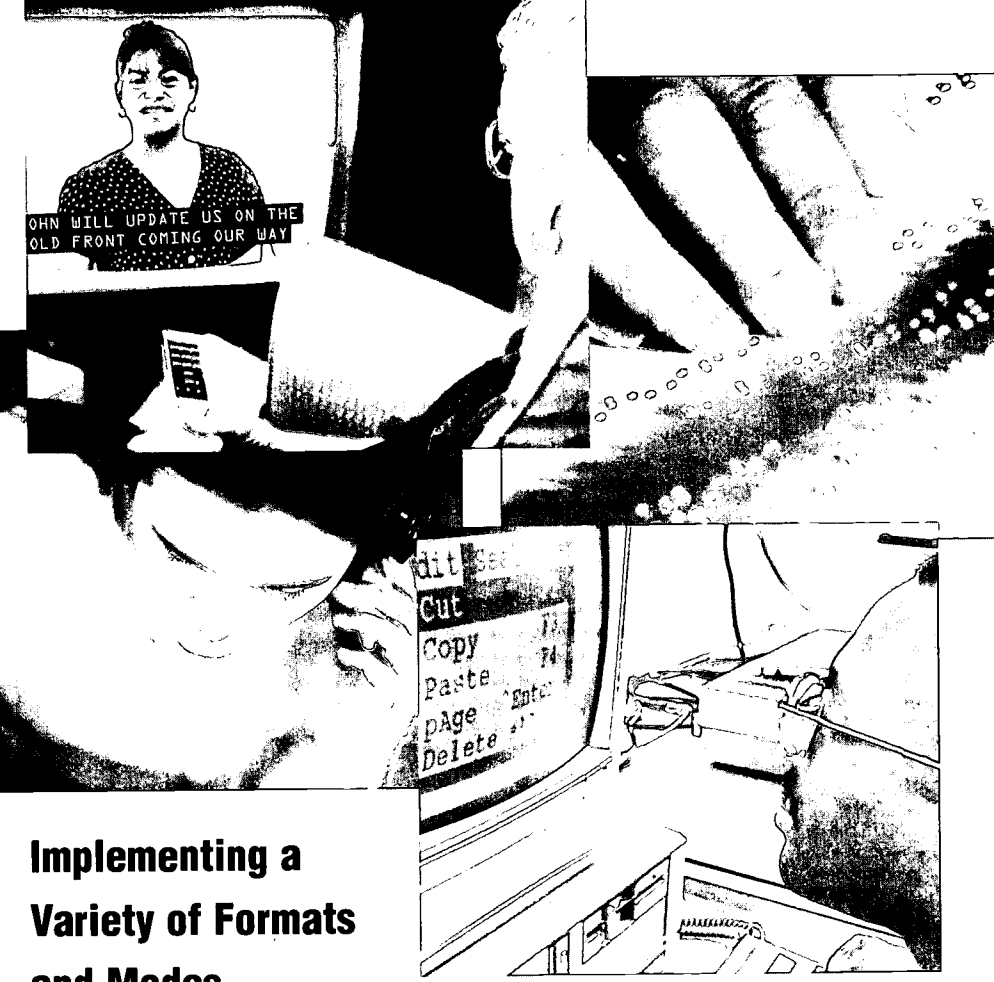
- Planning for dissemination, including seeking input from audiences, should be a part of project planning from the beginning and throughout the project.
- Information will be utilized when the audience has a need for it, and if it is available to them in an appropriate format.
- Let potential audiences know about the availability of your research information.
- Be prepared to provide information in an alternate format when it is requested.

Where?

- Make audiences aware of your information by learning where they look for information and using those channels.
- The World Wide Web is routinely used for making information available at low or no cost.
- The Web can be used to present multimedia options with accessible adaptations.
- Share your information with other researchers/other grantees whose audiences may also benefit.

How?

- New and evolving technology creates a need for new and expanded formats. For example, interactive computer-based materials may create new barriers for people with disabilities. We need to think about how these new options impact users and what we can do to make them accessible, if they are not.
- The principles of Universal Design can help make information more usable for all audiences. An example is a video with open captions. People in a high-noise environment, those learning English, and others can benefit from a captioned video, as well as those who are deaf or hard of hearing.



Implementing a Variety of Formats and Modes

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 media" approach to the sharing of information. In other words, "getting the message across" may also involve video representation, verbal descriptions, audio associated sounds, interactive databases, in addition to the printed word. One can easily see this type of communication pattern emerging in electronic formats such as the World Wide Web. Considering the formats for your information adds to the communicative power of your message.

Discussions of the following format options were originally presented in *The Research Exchange,* Vol. 1, No. 2, 1996. Information about each format addresses considerations such as staff time, equipment, costs, and [illegible] quired. In addition, some "helpful hints" and resources related to [illegible]al formats are provided.

Large Print

The production of larger-than-standard print is a function that can generally be accomplished in ways that do not require additional staff time and effort. Most word processing and other software programs offer a choice of font sizes. A font size of 18 point or larger would be considered large print.

Materials can also be enlarged through the use of a copy machine found in many offices. This method may produce occasional problems with margins, requiring special effort in positioning of each page.

With the exception of the need for additional paper, using large print formats seldom reflects perceptible additional costs. Technical support is often available via telephone and manuals from software and copier manufacturers to assist in adjusting font size and print type.

Large print options must also be considered for pages on the World Wide Web. The use of Cascading Style Sheets allows each user to set the format of pages to their own preferences. Some adaptive equipment can enlarge type for the user, so using larger type fonts on Web pages could actually hamper some users. Asking your Web visitors what they prefer will help determine a course of action.

Following the standards of Universal Design, you may be able, in many cases, to use a larger font size for your document. More readers can use the document without a need for any adaptation. Some resources for Large Print are available on the World Wide Web:

Large Print and Low Vision Resource Network™
http://www.large-print.net/

Large Print Suppliers and Publishers
http://www.tsbvi.edu/education/lpsuppliers.htm

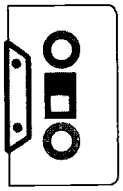
Sources of Large Print Software for Computers
http://www.nfb.org/tech/largept.htm

Large Print—View Web text in large print
http://www.thrall.org/largeprt.htm

Resource Directories from The Library of Congress' National Library Service for the Blind and Physically Handicapped (NLS)
http://www.loc.gov/nls/reference/directories.html

Helpful Hints In Creating Large Print Versions

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



Audio Tape

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 be converted into oral language for recording. A professional narrator is not required to create your audio recordings although that would give the best product. Having someone with a clear speaking voice who is very familiar with the material is all you need to create a high-quality audio tape. Project staff often meet these requirements, although the time required may take them from other duties.

A tape recorder that allows recording on standard 30 or 60 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. The cost of equipment and supplies related to audio taping has dropped greatly in the past several years.

The growth in popularity of books on tape for everyone reflects the fact that such adaptations may be universally appreciated. The NLS Resource Directories page mentioned previously also has information on cassette recording:
http://www.loc.gov/nls/reference/directories.html

Braille

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 is 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 to prepare materials for Brailling.

The costs of contracting for Braille service vary by location in the nation, however, services usually charge for the original production of a page and for each "reproduced" 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 at a reduced cost.

If the Brailling 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. A scanner can convert a printed page into electronic digital form.

The production of Braille formats requires staff time to 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.

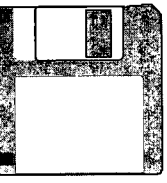
The National Library Service Resource Directories include a section describing Braille resources and services available by state and locality at **http://www.loc.gov/nls/reference/directories.html** Many of these resources will provide free or low-cost services.

Duxbury Systems 2000 also offers an extensive listing of Braille resources: **http://www.duxburysystems.com/resource.asp** including a World-Wide listing of Braille transcribers: **http://www.duxburysystems.com/resources/brlprod.asp**

If limited local resources exist, your state vocational rehabilitation agency for people with blindness can be contacted for information about vendors and services to assist you in producing materials in Braille. 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

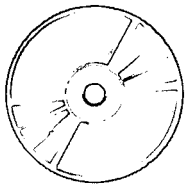
1. Convert symbols, icons, and other abbreviations to text.
2. Omit the use of "number" (#) signs because they are automatically inserted in front of numbers in Braille.
3. Do not include extra blank lines in your text. Indicate new paragraphs with the use of one tab.
4. Determine what commands the Braille 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 (•) in the text to an asterisk (*) or a hyphen (-).



Diskette

Dissemination of information on a computer diskette is quite common, and in some cases is being displaced by the CD-ROM that can hold much more information. However, 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.

Most offices today have computers with word processing packages that allow information to be saved in a variety of formats. Computers with special software or hardware can read aloud the text on a diskette. Costs of producing information on diskettes are low compared to many other formats. Diskettes can be purchased for less than $1 each. Additional resources are not necessary and staff time is generally not increased by the need to prepare materials in this format.



CD-ROM/DVD

The use of compact disks has grown rapidly with the availability of writable disks and read/write drives. A CD-ROM holds a great deal of information and is perfect for multi-media presentations using audio, video, and text formats at the same time. Staff time is required to learn how to operate the read/write drive. Once this is mastered, the process of downloading is similar to that used in other formats. Costs for this medium, both the CDs and the drives, have dropped greatly over the past few years.

The effort associated with using this format has also decreased, as the medium becomes more 'mainstream.' The use of CDs represents a format with the ability to capture multi-media presentations of information in a format that is easily accessed.

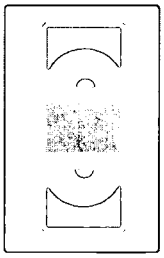
DVD (digital video disc) is the next generation of optical disc storage technology. It is a bigger (in terms of memory), faster CD that can hold cinema-like video, better-than-CD audio, and computer data. DVD may one day replace audio CD, videotape, laserdisc, CD-ROM, and video game cartridges (DVD Demystified, 2000). Most DVD players can also play typical CDs. Costs for this technology are just beginning to come down, and the consumer-writable format has not yet appeared. Accessibility of multi-media information disseminated by DVD should be considered, as discussed previously with regard to the CD-ROM format. A "Frequently Asked Questions" file about DVD technology is located at: **http://www.dvddemystified.com/dvdfaq.html**

Helpful Hints About Using CD-ROM/DVD

1. Determine what you want to include on your CD/DVD, keeping in mind that it is more flexible and can accommodate more formats than a diskette.
2. If a CD/DVD is going to be shared as an accessible alternate format it must be prepared in a manner that will allow a screen reader to operate. This means you should:
   - provide symbols, icons, graphics, tables, pictorials, and abbreviations with alternate text options;
   - 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/DVD should contain descriptive text (and/or audio) portions to relay information conveyed through the graphic or pictorial matter.
4. You may need scripts for audio and video pieces, captions, or other adaptations to make information accessible to a wider audience. The greater memory capacity of these media allow for a number of tracks to be recorded and available to specific audiences that can make use of them.



Video and Descriptive Video

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. If contracting for video production, no special equipment is required. In some cases, a grantee may wish to capture examples from training, therapy, or other procedures on video. In this case, consult with your video production company prior to doing this to determine special requirements to make the video as high-quality as possible.

The production of videos can be quite expensive depending on the complexity of the project. 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.

The production of a high-quality video requires significant effort and resources. Although video services can be contracted, many decisions regarding the finished product must be made by you. Consult with local television and video production companies for information about what services they provide.

Descriptive video (also known as video description) provides an additional synchronized soundtrack about visual events happening in the video that are not included in the original soundtrack. The narrative may include actions, color, settings, costumes, physical characteristics and body language. Including this description material often provides a richer experience for people with visual or other interpretational impairments. Legislation is pending to require more descriptive video offerings, including emergency announcements. For details, see:
http://www.vipace.org/pressdv.html and
http://www.fcc.gov/Bureaus/Mass_Media/News_Releases/2000/nrmm0030.html

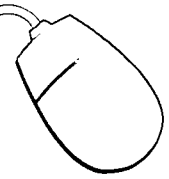
Descriptive soundtrack additions may cost around $2,000 for a 30 minute video. A number of resources can help with descriptive video. (Personal Communication, WGBH's Caption Center, August 28, 2000). For an overview of WGBH Descriptive Video Services, see the Web site at **http://main.wgbh.org/wgbh/access/dvs/**
The Narrative Television Network is found at
http://www.narrative.org/

Captions

Typically, captioning is a service that will be performed by a contractor so no special equipment will be required by the grantee. When a video product will carry captions, planning should begin at the front end, not after the video has been completed. There is a great variety in the types of captioning available and you will need to consult with the contractor to determine which is best for your video product.

The use of digital or analog video will also make a difference in captioning. An accurate transcript of the audio (on disk) is necessary for the captioning process. If you cannot supply one, the cost and time for captioning will be increased. A one-hour videotape can take anywhere from 8 to 20 hours to caption. On average, it may cost $800–$2,000 (or more) per hour of video, depending on the type of captioning (Personal Communication, WGBH Caption Center, August 28, 2000).

The Captioned Media Program (CMP) is operated by the National Association of the Deaf and funded by the US Department of Education. The CMP has a variety of resources to assist with captioning questions at their Web site: **http://www.cfv.org/**
A listing of Approved Captioning Service Vendors can be found at: **http://www.cfv.org/caai/nadh11.htm**



Internet/World Wide Web

The Internet is a computer-based "network of networks" that allows information to be shared electronically, around the world. This also includes the capability for electronic mail (e-mail). The World Wide Web is a subset of Internet computers which provide clients with documents that contain embedded references to images, audio, other documents or multimedia resources that exist on other Web servers. The medium offers access to anyone with a computer and a modem, however, variations in equipment mean that how materials are received will also vary. People with disabilities need special consideration to ensure that Web-based materials are accessible.

This is a person-intensive medium that does require a significant commitment of staff time. Specialized staff and equipment dedicated to the Web site may be required if a high-quality, dynamic site is presented. Many organizations contract the development and operation of their site.

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, through the computer system of a university, or indirect, through an Internet service provider (ISP). The factors which typically impact use of the Internet and the Web are the memory capability and processing speed of your computer and the speed of transfer possible through a 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, to download information, and to utilize interactive features.

The cost of a computer system that allows you to use the Internet as an accessible format for your information is quite

variable. In addition, you may have online service charges of $10 to $25 per month. Equipment to host (serve) information onto the Web also varies, but will rarely be needed, as most grantees can access servers available through other sources. Many ISPs offer Web space for free or at low monthly rates.

Ultimate cost savings can also be seen if information is posted on the Web where anyone who is interested can view and download it. This will eliminate the need for printing and distributing text copies in some cases.

The development and maintenance of a World Wide Web site is no small undertaking, if you intend to make it an effective communication medium. It requires planning and specialized staff, or extensive staff training. Internet versions of documents provide opportunities for interactive and multi-media examples and additions to a print document. Again, accessibility for people with disabilities is important and must be incorporated into planning for your Web site.

NIDRR and NSF have been major supporters of the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (WC3), the Web's coordinating body. A wealth of technical information on Web accessibility is available at their Web site **http://www.w3.org/WAI/**

An online accessibility validator, BOBBY **http://www.cast.org/bobby/** was developed by the Center for Applied Special Technology (CAST) and is based on WAI guidelines.

EASI (Equal Access to Software and Information) now provides Educational Internet Captioning and Transcription Service at a reasonable cost to educational institutions. Their product is aimed at the educational content provider and they do not compete with commercial quality captioning services. For information, visit the EASI Web site: **http://www.rit.edu/~easi/caption.htm**

An impressive array of informational resources are available through the Web itself and through your local bookstore or library. Many magazines (some online) 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. An *Annotated WWW*

Resource List is available on the NCDDR Web site. Go to: **http://www.ncddr.org/du/researchexchange/v03n03/annotated.html**

Helpful Hints in Producing Web Pages

1. Be sure that your Web 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 site should have something to say to those you expect to visit.
3. The World Wide Web 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 Web 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 Web. This will give you experience in good and bad components of Web pages so that your own site can be improved.

Other Format Concerns

Consider carefully how to make your project-related information accessible to all of your potential intended user groups. Decisions about the way 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 promote 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.

By seeking input from targeted audiences in dissemination planning, grantees can gain understanding of specific preferences. Different cultural groups, for example, may use different trusted sources to seek information and may prefer formats that differ from the preferences of other groups. Getting to know your audience will help you respond to those preferences.

Not all audiences wish to receive information in English. Consumers who would be interested in your research information might make better use of it when presented in their native language, or along with a translation. If you have a significant audience that needs information in Spanish or another language, you may want to contract with a translator in order to have access to those services when they are needed. A number of translator and interpreter services are available online:

American Translators Association
http://www.atanet.org/bin/view.pl/181.html

The American Association of Language Specialists
http://www.taals.net/

Other Translators/Interpreters Associations
http://www.atanet.org/links/linkstoother.htm

NCATA's Directory of Translators & Interpreters
http://www.ncata.org/main.html-ssi

Associations of Translators and Interpreters
http://www.aiea.ualr.edu/research/trans/assoc.html

The Translator's Home Companion
http://www.lai.com/lai/companion.html

eTranslations: A Web site translations service specializing in foreign language translations worldwide.
http://www.etranslations.com/

In addition to the alternate formats discussed, you should also consider reading levels and the focus or purpose of the information for a particular audience. The same research results may be packaged in different ways to be more useful for specific audiences. You would not expect a consumer to want information at the same depth that would serve a researcher. On the other hand, more background information might be useful to a consumer, but would be not be useful to another researcher.

People First

Another consideration when developing materials for a variety of audiences is using "people first" terminology. While this is second nature to many disability researchers, the concept may be to new to recently hired staff members and others not familiar with disability issues.

> PUT PEOPLE FIRST, not their disability. Say woman with arthritis, children who are deaf, people with disabilities. This puts the focus on the individual, not the particular functional limitation....Crippled, deformed, suffers from, victim of, the retarded, infirm, the deaf and dumb, etc. are never acceptable under any circumstances (RTC/IL, 1996).

The quote is from a brochure on *Guidelines for Reporting and Writing About People With Disabilities* (BR2), developed by the Research and Training Center on Independent Living at the University of Kansas. The brochure reflects input from over 100 national disability groups and has been adopted by the Associated Press Stylebook, American Psychological Association, and others. A page on the RTC/IL Web site provides information on the Guidelines as well as instructions for obtaining one or more copies.
http://www.lsi.ukans.edu/rtcil/GUIDELIN.HTM

But Is It User-Friendly?

Following are some suggestions taken from *Writing for the Non-Researcher: Sharing your Findings With a Larger Audience* (Higgins, 2000), a resource developed by the Research and Training Center on Independent Living (RTC/IL) at the University of Kansas. It was developed for the Research Information for Independent Living (RIIL) project funded by NIDRR and operated jointly with the Independent Living Research Utilization Program of TIRR (The Institute for Rehabilitation & Research).

Today — more than ever — people are looking for information that will make their lives better. But the average person, regardless of their level of education, doesn't know about the treasure chest of research information in scientific reports. In fact, statistics show that a typical academic journal article is read by less than a thousand people.

Accustomed to newspapers and magazines, the typical reader, if he or she does obtain a scientific document, finds the information hard to understand. That is because the information the reader wants is buried in the publication's lengthy text of unfamiliar words and extensive research method justification.

Popular media is easier to understand because journalists have trained for years to express information clearly. Take advantage of the journalist's bag of trade secrets. The following is a writing checklist to help you communicate so that the average reader will want to read and possibly use your research findings. These tips, based on dissemination research, will allow you to share your research with a broader audience.

Streamline information by eliminating unnecessary detail.

An author who gives every research detail, loses readers unable or unwilling to decipher the main points of the research. Extract the essence of the research, especially the context and results. Down play research methodology, because most people selectively tune out information that isn't readily useful. Keep in mind what interests the audience, not what you think should interest them.

Tell the reader the benefits of your research at the beginning. As advertisers know, the benefit the — what's in it for me — is the first interest of any consumer. After answering the "what," follow through with the journalistic basics: "Who, When, Where, Why, and How."

Address in advance any concerns that the reader may have if the research information conflicts with current thought. Confront the resistance and fears that typically accompany change.

Communicate directly to your audience — not above, nor below. Readers should be comfortable with your publication and not feel as if they are outsiders. You cannot assume the reader understands nothing. . .or everything. Some researchers may be secretly pleased if their writing is not understood. They assume that only the most intelligent can understand their publication. Readers who buy into that thinking blame themselves for incomprehension. That's faulty logic. If a reader can't understand writing, that is the writer's responsibility, not the reader's.

Be specific. Use concrete language rather than abstract rhetoric. A "sizable" reduction in disability parking space violation takes on new meaning if the reduction is 10%, 40%, or 95%.

Keep your audience's vocabulary in mind. Write as if you were explaining your work to your elderly Aunt Nancy at a family event. A scholarly document uses the technical language of its particular field to reach a strictly-defined audience and abounds with formal, multi-syllabic words. A news article, on the other hand, aims for as wide an audience as possible and avoids technical terms except when needed. Instead of using arcane acronyms and the technical words of your field, substitute common words, such as do (implement), bring about (facilitate), price (cost impact considerations), or use (utilize).

Don't be a show-off. If it is necessary to use a certain technical word for precision of meaning, do so. Give a concise, working definition for unfamiliar terms as soon as you use them. Also, refrain from using foreign phrases and words built on Latin and Greek prefixes, suffixes, and roots. Shorter, more common words are easier to understand, and in most cases carry the message more effectively.

Use the active verb voice. Scientific journals typically employ the verb voice for an impersonal description of processes. When the subject is acted upon, the verb is in the passive voice (e.g. The report was written by the researcher.) General audience publications instead use the active verb voice for a strong, direct style. If the subject performs the action, the verb is in the active voice (e.g., The researcher wrote the report.) This is because the active voice is less evasive and quickly engages readers.

Shorter is better: Limit each sentence to one idea. The skill to efficiently grasp meaning is not related to intelligence or advanced degrees. Even highly educated people find it's easier to decipher complex material presented clearly. Unlike a mystery story, the reason for your communication should be bold and clear in each sentence. Also, sentences more than 25 words overwhelm short-term memory. Why? It's the sentence complexity, not length, that confuses readers.

Keep paragraphs short. The shorter-is-better advice applies to each paragraph. In most writing, lengthy paragraphs indicate lack of focus. Measure paragraphs by the number of text lines, not sentences.

Avoid tedious grammatical constructions. Beware of conditions (e.g., if, then), multiple negatives (e.g., not uncooperative), and long strings of nouns.

Prune prepositional phrases. They often just pad the distance from one idea to another.

Avoid using nouns as verbs. Examples of this include to *impact* or to *interface*. That same advice applies to turning simple verbs into phrases. *Contact* is more to the point than *make contact with*.

Avoid redundant word combinations and padded phrases. Do you need "future" before "plan" or "end" before "result?" You know the answer to that question! And, look how one word can knock the stuffing out of these cluttered phrases: at this point in time (now), has the ability to (can), in light of the fact that (because), in the event that (if), the question as to whether (whether).....you get the idea!

Weave analogies, examples, and anecdotes into your report. These brief examples personalize research and present it in a way that people can understand.

Take advantage of visual aids to emphasize significant details. Often a pie chart or photograph is the piece of information a reader will notice and retain.

When finished, revise! Once you have put together the parts, you understand the whole article better. Revision helps you see the article highlights and what is missing. The big question at this point is: Have you translated from the academic world to the everyday world? Read sentences aloud to test clarity and help you hear whether the sentence is awkward, confusing, or long. Imagine your reader as you read.

Which sentence is easier to understand?

1. Many institutions of higher education recognize the need for youth at the threshold of maturity to confront the choice of life's endeavor and thus require students to select a field of concentration.

2. Many colleges and universities force students to make decisions about their careers by requiring them to select a major. (Higgins, 2001)

Use your word-processing software to let you know how readable your text is. The "Tool" section of most word processing programs contains a grammar check program. Not only does it highlight possible grammatical problems, the program also measures readability. Using a calculation that factors the size of syllables, words, sentences, and paragraphs, this program produces a readability index. If your end number is more than 13, you are sure to lose reader interest. However, don't rely too much on these formulas and index numbers. Scoring does not take into account such factors as numerals (which read as shorter words); titles (each one can add many words to a sentence); or necessary technical words (sometimes there is no way around words such as 'empowerment' or Web site addresses, both of which then raise the syllable count) (Higgins, 2000).

Resources

Many resources are available to help simplify and clarify writing. Following are some Web-based materials.

- *Writing User Friendly Documents*
  Plain Language Action Network,
  National Partnership for Reinventing Government
  http://www.plainlanguage.gov/handbook/

- The European Commission's Translation Service is running the "Fight the FOG" campaign to encourage authors and translators to write more clearly.
  http://europa.eu.int/comm/translation/en/ftfog/index.htm

  - *Teach Yourself to Fight the FOG*
    http://europa.eu.int/comm/translation/en/ftfog/course.htm

  - *How to Write Clearly*
    http://europa.eu.int/comm/translation/en/ftfog/booklet/index.htm

- Technical Writing — Links to resources for technical writers
  http://www.writerswrite.com/technical/

- The User-Friendly Manuals Website
  http://www.prc.dk/user-friendly-manuals/ufm/home.html

  - Useful links for technical communicators
    http://www.prc.dk/user-friendly-manuals/ufm/linklist.htm

- *The Scientist* 11[2]:16, Jan. 20, 1997
  Clarification by Kathryn S. Brown
  http://www.the-scientist.com/yr1997/jan/prof_970120.html

  - Note: requires free registration at
    http://www.the-scientist.com/register.htm

What Do Audiences Prefer?

The NCDDR has conducted surveys with consumers to learn about their preferred information sources and preferred formats and modes for receiving information. In 2000, the NCDDR surveyed consumers through the national network of Independent Living Centers. Initial responses from 544 consumers have been analyzed (NCDDR, 2001).

The most notable change was the increase in responses identifying the *Computer* as a source used to get information (56 percent, up from 27 percent in a 1996 survey). Other information sources identified by consumers included *Newsletters* (61 percent), *Magazines* (42 percent) and *Television* (39 percent).

The most preferred format, *Printed Materials*, was identified by 72 percent of consumers in the 2000 survey. *Computer* as a preferred format more than doubled, from 25 percent in 1996, to 61 percent in 2000. *Videotape* and *Classroom, conference, meeting* were preferred by 39 percent of consumers.

Respondents were 78 percent White, 12 percent Black, 8 percent American Indian or Alaska Native, and 7 percent Some Other Race. Also, 8 percent of respondents were Hispanic. Demographic data were not collected in the first survey.

These preliminary data demonstrate that consumers with disabilities do use a variety of sources and formats to obtain disability research information. We hope grantees will take note and strive to use the formats preferred by their target audience(s) in dissemination activities. User-friendly materials that are available in alternate, accessible formats will reach a wider audience and promote utilization of the results of NIDRR-funded research.

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