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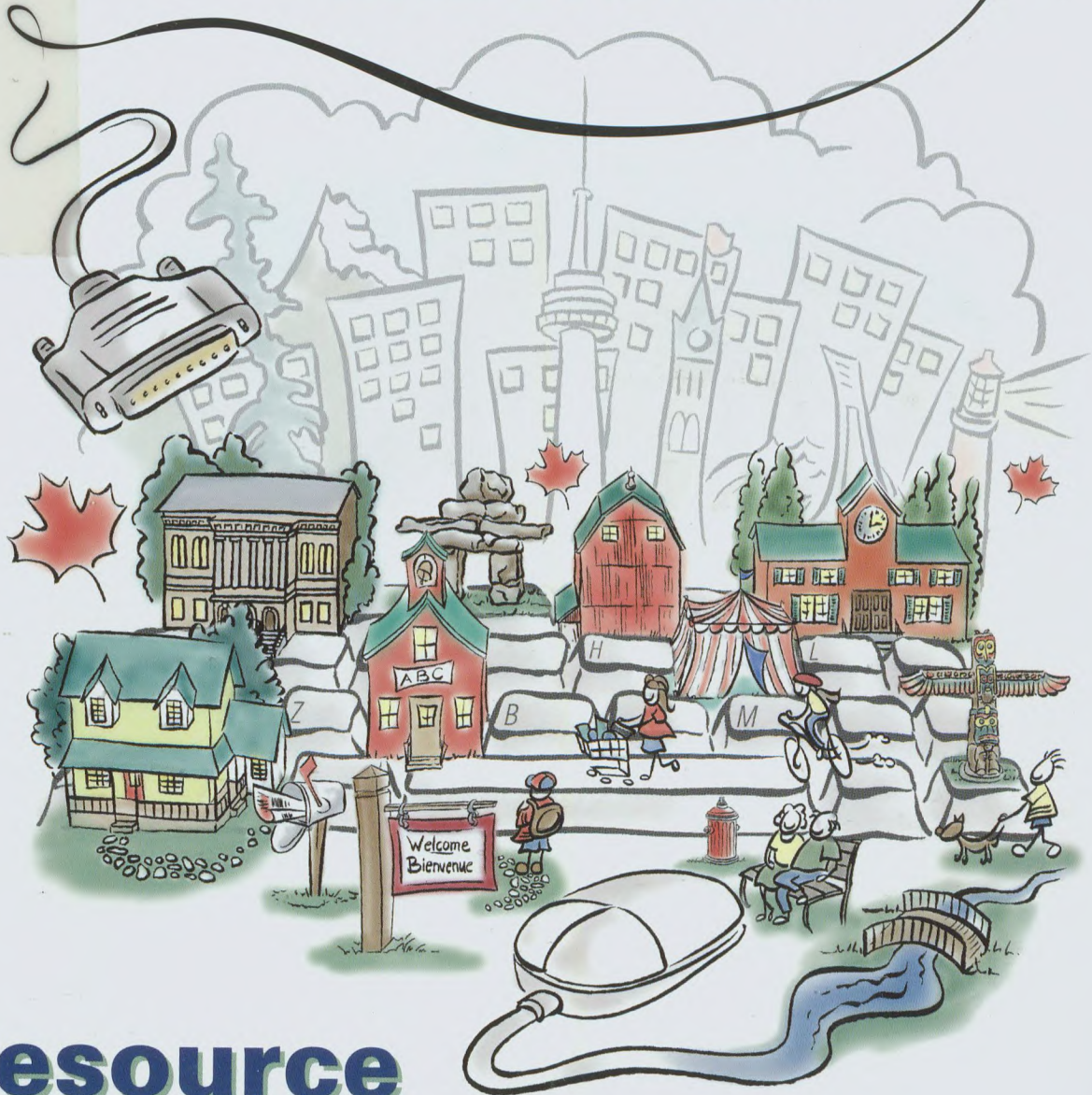
Gouvernement
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COMMUNITY ACCESS PROGRAM

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Resource Guide

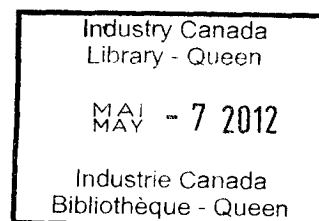
Assistive Technology
for CAP Sites

Canada 



COMMUNITY ACCESS PROGRAM

Resource Guide Assistive Technology for CAP Sites



Industry Canada
August 1999

Aussi disponible en français sous le titre *Technologie d'aide pour les centres d'accès communautaire — Guide de ressources*.

This publication can be made available in alternative formats upon request. Contact the Information Distribution Centre at the numbers listed below.

Information Distribution Centre
Communications Branch
Industry Canada
Room 205D, West Tower
235 Queen Street
Ottawa ON K1A 0H5
Tel.: (613) 947-7466
Fax: (613) 954-6436
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Additional information regarding the Community Access Program is also available through the following media:

Tel.: 1-800-575-9200
TTY: 1-800-465-7735
Fax: (613) 952-8711
E-mail: **comaccess@ic.gc.ca**
Web site: **<http://cap.ic.gc.ca/>**

© Her Majesty the Queen in Right of Canada (Industry Canada) 1999
Cat. No. C2-428/1999-29E
ISBN 0-662-28563-8
52988 E

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Web site: http://nsaccess.ns.ca/~lunenburg_cap/index.html

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EXECUTIVE SUMMARY

This document provides resources on specialized computer technology (assistive technology) to allow people with disabilities to participate in the Community Access Program (CAP). The intent is to offer guidance to community members designing CAP sites on the provision of supports for community members with disabilities. The resources referenced also provide valuable information to existing CAP sites on providing assistive technology supports for community members with disabilities.

Assistive technology is any item or piece of equipment used to maintain or improve the functional capabilities of a person with a disability. Assistive technology in this document refers mainly to technology support specifically for computers.

Assistive technology resources for mobility, sensory, traumatic head injury and cognitive delay, learning disabilities/difficulties and communication disorders are cited. Most references are links to Web sites that provide comprehensive and appropriate information on specific areas, including disabilities, assistive technologies that support different disabilities, assistive technology products, or links to downloadable demonstration versions of software products. The intent is for you to use this information when developing a CAP site in your community. The information will also be invaluable for the ongoing inclusion of people with disabilities in your CAP community. A concerted effort has been made to provide links to Web pages in both official languages; however, many more sites on this subject exist in English than French.

By supporting the development of this document, Industry Canada indicates a commitment to provide inclusive community-based Internet opportunities to all Canadians.

CAP CONCEPT

The Community Access Program (CAP) is a federal government initiative administered by Industry Canada. It provides support for public computer access to the Information Highway via the Internet at the local community level. The overall objective is to provide all Canadians with affordable, convenient access to the global, knowledge-based economy and the opportunity to use its technologies.

Canada has a strong base on which to build access links to the global, knowledge-based economy. In collaboration with provincial, territorial and municipal governments, the private sector and not-for-profit organizations, CAP will help to establish up to 10 000 public Internet access sites in rural, remote and urban communities across Canada.

<http://cap.ic.gc.ca> (Canadian, bilingual)

The Community Access Program is a key component of the Government of Canada's Connecting Canadians initiative, whose goal is to make Canada the most connected nation in the world.

Community Access Program: Connecting Canada's Communities to the Information Highway.

Alternative Contact:

Toll-free: 1-800-575-9200

TTY: 1-800-465-7735

CAP SITE ACCESSIBILITY

Universal access is an important consideration when planning a CAP site. Universal access refers to access considerations that include participation and accessibility for all individuals whether they are blind, using a wheelchair, hearing impaired, families with young children, temporarily using mobility aids (such as crutches), elderly individuals or otherwise.

Technically, there are three levels of accessing a CAP site for a person with a disability.

Physical accessibility is the primary concern and this includes:

- accessible parking and ramps;
- barrier-free hallways;
- appropriate lighting;
- accessible amenities;
- visually cued alarm systems; and
- signage.

Access to the computer station and inputting information into the computer is the second access level. Physically accessing the workstation can be difficult for people in a wheelchair or people who are blind or have low vision. Consider all of the following when accommodating people with different disabilities:

- table height and width;
- workspace;
- turning space;
- ergonomic chairs for people with back injury; and
- lighting.

Inputting information into the computer is traditionally done using a keyboard. When accessing the computer, people with high-level quadriplegia (paralysed from the neck down) will perhaps need to bypass the keyboard. Use of an on-screen keyboard with single-switch access facilitates information input for some individuals with quadriplegia. Other means of bypassing the keyboard include voice input technology or Morse code input. In fact, people with a variety of different disabilities use voice

input technology to input information into the computer, including individuals who are blind and those with learning disabilities. The individual and his or her needs determine the mode of inputting information into a computer.

The ability to access information output from the computer is the third level of accessibility. This includes screen monitors, software and Web pages. Various software packages (particularly children's software) offer scanning options to skip from "hotspot" to "hotspot" on the screen using single-switch input methods. For example, instead of using the mouse to select the quit button, the program scans the various buttons on-screen and the user hits the switch when the scan highlights "quit."

Accessing windows-based formats of various software packages is particularly challenging for people who are blind or have very low vision. In this case, screen-reader software is used to access the program information. When it comes to Web pages, however, visual access may be prohibited or limited by low-vision icons and graphics. Consideration of accessible Web design practices is necessary for universal access. Text or graphic display options on Web pages is one accessible feature for people who use screen readers; alternative description tags on graphics is another. Plain language and large, clear fonts make accessing Web pages easier for many. A thorough overview of authoring accessible Web pages is available on the Public Service Commission of Canada Web site:

<http://www.psc-cfp.gc.ca/dmd/access/welcome1.htm>

(Canadian, bilingual)

Public Service Commission of Canada. Detailed information on designing universal Web pages, an accessibility Web site test and other Web page access issues.

Alternative Contact:

Headquarters

West Tower, L'Esplanade Laurier

300 Laurier Avenue West

Ottawa ON K1A 0M7

Tel.: (613) 992-9562

Fax: (613) 995-1593

<http://cap.ic.gc.ca/vlib/access/> (Canadian, bilingual)
CAP accessibility reference page.

Alternative Contact:

Toll-free: 1-800-575-9200

TTY: 1-800-465-7735

http://canada.gc.ca/programs/guide/3_1e.html (Canadian)
Government of Canada Internet Guide. 3rd Edition. Presentation,
style and accessibility.

Alternative Contact:

Treasury Board of Canada Secretariat

140 O'Connor Street

Ottawa ON K1A 0G5

Tel.: (613) 957-2400 (General Inquiries)

Fax.: (613) 996-0518

E-mail: **internet.guide@tbs-sct.gc.ca**

<http://www.w3.org/WAI>

Describes the W3C (World Wide Web Consortium) mission; resources on accessibility (guidelines, fact sheets, quick tips); events, news, history; Web Accessibility Initiative (WAI) technical activity; involvement and information; and the WAI team. The WAI, in coordination with organizations around the world, is pursuing accessibility of the Web through five primary areas of work: technology, guidelines, tools, education and outreach, and research and development.

COMMUNITY ASSESSMENT

When considering access to CAP sites by people with disabilities, the planning committee should seek the participation and contribution of people with disabilities at the proposal development stage. In small rural communities, this can be achieved by word of mouth. In other situations, a community meeting requesting the involvement and participation of people with disabilities is often fruitful. In this way, the committee may attract people with disabilities who also have an interest in information technology or assistive technology. Having representation on the planning committee of individuals with disabilities will ensure that universal access is addressed appropriately.

GENERAL RESOURCES ON DISABILITIES

The following sites contain links to information about disabilities in general.

http://www.psc-cfp.gc.ca/eepmp-pmpee/program_overview/eeerc.htm
(Canadian, bilingual)

The Enabling Resource Centre of the Public Service Commission of Canada provides job accommodation advice and referrals.

Alternative Contact:

Employment Equity Enabling Resource Centre for Persons with Disabilities
Tel.: (613) 992-9965
TTY: (613) 992-9021
Fax: (613) 992-9977

<http://indie.ca/> (Canadian, bilingual)

Indie is a Canadian search engine for disability-related resources.

<http://www.ccrw.org> (Canadian)

The Canadian Council on Rehabilitation and Work provides this site on employment issues for people with disabilities.

Alternative Contact:

Canadian Council on Rehabilitation and Work
302-500 University Avenue
Toronto ON M5G 1V7
Tel.: (416) 260-3060
TTY: (416) 260-9223
Fax: (416) 260-3093

<http://www.gladnet.org> (Canadian)

GLADNET has information on training and education for people with disabilities.

Alternative Contact:

GLADNET
P.O. Box 612, Station B
Ottawa ON K1P 5P7
Tel.: (613) 825-6193
Fax: (613) 825-2953

<http://www.pcs.mb.ca/~ccd/> (Canadian, bilingual)

Council of Canadians with Disabilities: a leading voice of persons with disabilities in Canada.

Alternative Contact:

Council of Canadians with Disabilities
926-294 Portage Avenue
Winnipeg MB R3C 0B9
Tel./TTY: (204) 947-0303

<http://www.familyvillage.wisc.edu/>

The Family Village is a site with links to information about all kinds of disabilities. It is especially useful if you are looking for information about a rare disability.

Alternative Contact:

The Family Village
Waisman Center
University of Wisconsin-Madison
1500 Highland Avenue
Madison WI 53705-2280
USA

<http://www.icdi.wvu.edu/Others.htm>

Untangling the Web is an excellent list of disability resources that is very well organized and easy to read.

<http://codi.buffalo.edu/>

Cornucopia of Disability Information is another extensive list of links to information about disabilities.

<http://www.geocities.com/~drm/>

Disability Resources Monthly has an extensive list of links and resources about all kinds of disabilities.

WHAT IS ASSISTIVE TECHNOLOGY?

For many, assistive technology offers opportunities of inclusion and access to fundamental activities of daily living. Many individuals with disabilities would not be able to access or manipulate information on a computer if not for the added support of specialized software and hardware. For individuals with disabilities, adapted computers provide opportunities to communicate, access information, compete for and acquire employment, access curriculum or other learning activities, and participate in leisure opportunities.

There are a variety of different terms used when referring to computer-based assistive technology including *access technology*, *special education technology*, *adapted computer technology* and *adaptive technology*. As noted, when using the term assistive technology in this document, we are referring specifically to computer-related technology.

To ensure that the assistive technology used by the individual with the disability is appropriate and safe, assessment by trained individuals, including assistive technology specialists and rehabilitation technologists, is recommended. In this assessment process, involvement of the individual with the disability, as primary user of the technology, is critical. Inclusion of secondary users or anyone offering support to the person with the disability is also important to ensure effective use and application of the technology. Optimal usage of assistive technology relies on the placement of trained and knowledgeable secondary users, accessible and reliable technical support, ease of use of the technology, the personality of the primary user, and appropriate expectations of the technology use and application (Scherer, 1993).

ASSESSMENT RESOURCES

There are many sources available on the Internet for assistive technology assessment information. Below are some sources of interest.

<http://janweb.icdi.wvu.edu/english/homecan.htm> (Canadian)
JAN Canada is the Job Accommodation Network of Canada, a free telephone and Web service that provides advice on site and technical accommodations for people with disabilities.

Alternative Contact:

Job Accommodation Network of Canada
CCRW
9th Floor, 20 King Street West
Toronto ON M5H 1C4
Toll-free: 1-800-526-2262
TTY: (416) 974-2636
Fax: (416) 974-5577

<http://www.neilsquire.ca> (Canadian)
The Neil Squire Foundation is located in various regions across Canada.
Fee for service assessments.

Alternative Contact:

Head Office
220-2250 Boundary Road
Burnaby BC V5M 4G5
Tel.: (604) 473-9363
Fax: (604) 473-9364

1535 York Place
Victoria BC V8R 5X1
Tel.: (250) 595-7442
Fax: (250) 595-7474

100-2445 13th Avenue
Regina SK S4P 0W1
Tel.: (306) 781-6023
Fax: (306) 522-9474

500-179 Colonnade Road
Nepean ON K2E 7J4
Tel.: (613) 723-3575
Fax: (613) 723-3579

Park Office Centre
104-440 Wilsey Road
Fredericton NB E3B 7G5
Tel.: (506) 450-7999
Fax: (506) 453-9681

Allanach Building
8-272 St. George Street
Moncton NB E1C 1W6

<http://www.interlog.com/~acantor/> (Canadian)
Cantor + Associates makes workplaces, schools and services fully
accessible to people with disabilities.

Alternative Contact:
Cantor + Associates
32 Queensdale Avenue
Toronto ON M4J 1X9
Tel.: (416) 406-5098
Fax: (416) 406-5498

<http://www.resna.org/resna/pubsbro.htm>

The Rehabilitation Engineering and Assistive Technology Society of North America promotes research, development and education, and provides conferences and a journal about assistive technology.

Alternative Contact:

RESNA Press
Department 4006
Washington DC 20042-4006
USA

<http://users.ids.net/~taofri/assess1.html>

Information on assistive technology assessments, including who can do them, what is involved and how to tell if one is necessary.

Alternative Contact:

TechACCESS of RI
300 Richmond Street
Providence RI 02903-4222
USA
Tel./TDD and Fax: (401) 273-1990

GENERAL RESOURCES FOR ASSISTIVE TECHNOLOGY

There are several Web pages that have extensive lists of assistive technology for people with disabilities. They are useful if you don't know exactly what you are looking for or if you would like to look around a little more to find out what's available.

<http://strategis.ic.gc.ca/adio> (Canadian, bilingual)

Site for the Assistive Devices Industry Office, Industry Canada. The office provides advice and guidance to the assistive devices industry in Canada and maintains links with users and providers.

Alternative Contact:

ADIO

3701 Carling Avenue

Ottawa ON K2H 8S2

Tel.: (613) 990-4316 or (613) 990-4297

Fax: (613) 998-5923

<http://www.escape.ca/~ccds/assistlinks.html> (Canadian)

The Canadian Centre on Disability Studies is a consumer-directed, university-affiliated centre dedicated to research, education and information dissemination on disability issues.

Alternative Contact:

CCDS

2404-7 Evergreen Place

Winnipeg MB R3L 2T3

Tel.: (204) 287-8411

Fax: (204) 284-5343

E-mail: **ccds@escape.ca**

<http://www.esmerel.org/adapt/canada.htm> (Canadian)

Collection of Canadian adaptive technology sites.

<http://www.dgp.toronto.edu/people/BillBuxton/InputSources.html>
(Canadian)

A directory of sources for input technologies.

<http://www.starlingweb.com/adp/> (Canadian)

Assistive Devices Industry Association of Canada (CanADIA).

Alternative Contact:

CanADIA

100-140 Lincoln Heights Road

Ottawa ON K2B 8A6

Tel.: (613) 820-2272

Fax: (613) 820-6983

<http://www.betacom.com/> (Canadian)

Distributors and manufacturers of technological solutions for those with visual, physical, communication or learning disabilities.

Alternative Contact:

Betacom

2999 King Street West

Inglewood ON L0N 1K0

Tel.: (905) 838-1411

Toll-free: 1-800-353-1107

Fax: (905) 838-1487

<http://www.hmirehab.com/> (Canadian)

HMI Rehabilitation Technology and Training Centre Inc. has a library of assistive technology resources; however, you must subscribe in order to use the library.

Alternative Contact:

HMI Rehabilitation Technology and Training Centre Inc.

154 Highway 33 West

Kelowna BC V1X 1X7

Toll-free: 1-800-661-4446

Fax: (250) 491-5854

<http://www.dlcwest.com/~nsilc/classifieds.html> (Canadian)
NSILC has listings of used assistive technology products that are for sale.

Alternative Contact:

NSILC
112-514 23rd Street East
Saskatoon SK S7K 0J8
Tel.: (306) 665-5508
Fax: (306) 244-2453

<http://www.tecso.qc.ca/> (Canadian, bilingual)
TECSO is a research and development company based in Quebec that specializes in providing assistive technology to people with disabilities and elderly people.

Alternative Contact:

TECSO Inc.
2nd Floor
1717 René Lévesque Boulevard East
Montréal QC H2L 4T3
Tel.: (514) 590-4218
Fax: (514) 590-4228

<http://www.microscience.on.ca/> (Canadian)
MICROCOMPUTER Science Centre Inc. creates computer solutions for people with disabilities.

Alternative Contact:

MICROCOMPUTER Science Centre Inc.
6-5288 General Road
Mississauga ON L4W 1Z8
Tel./TDD: (905) 629-1654
Fax: (905) 629-2321

<http://www.utoronto.ca/atrc/reference/tech/techgloss.html> (Canadian)
The University of Toronto's list of assistive technologies is sorted by type of technology and includes alternative keyboards and mouse systems, optical character recognition, screen magnifiers, screen readers, text-to-speech systems, voice recognition systems and word prediction software.

Alternative Contact:

Adaptive Technology Resource Centre
1st Floor, J.P. Robarts Library
University of Toronto Information Commons
130 St. George Street
Toronto ON M5S 3H1
Tel.: (416) 978-4360
Fax: (416) 971-2629

<http://www.oise.utoronto.ca/ORTC> (Canadian)
The Ontario Rehabilitation Technology Consortium.

Alternative Contact:

Bloorview MacMillan Centre
350 Rumsey Road
Toronto ON M4G 1R8
Tel.: (416) 425-6220, ext. 3506
Fax: (416) 425-1634
E-mail: **ortcdl@oise.utoronto.ca**

<http://www.craph.org/irdpq/> (Canadian, bilingual)
Extensive list of assistive technology links.

Alternative Contact:

Institut de réadaptation en déficience physique de Québec
525 Hamel Boulevard
Québec City QC G1M 2S8
Tel.: (418) 529-9141
Fax: (418) 529-3699

<http://www.abledata.com>

ABLEDATA is a database of assistive technology products, including listings for discontinued products, prices, and addresses and phone numbers of the manufacturers.

Alternative Contact:

ABLEDATA

200-8401 Colesville Road

Silver Spring MD 20910

USA

Toll-free: 1-800-227-0216

<http://www.apple.com/education/k12/disability>

Apple Computer's disability resources page has links to downloads, a searchable database of assistive technology products for Macintosh computers, and news and updates about Macintosh assistive technology.

<http://www.rit.edu/~easi>

Equal Access to Software and Information project.

<http://www.itpolicy.gsa.gov/cita/front.htm>

The CITA handbook, Managing Information Resources for Accessibility, provides lists of the types of resources available for each disability and gives guidelines and suggestions for making information resources more accessible.

Alternative Contact:

U.S. General Services Administration

Center for IT Accommodation (CITA)

1800 and F Street, NW, Room 1234, MC:MKC

Washington DC 20405-0001

USA

Tel.: (202) 501-4906

TDD: (202) 501-2010

Fax: (202) 501-6269

MOBILITY DISABILITIES

People with mobility disabilities are restricted in their ability to move around, carry out manual tasks or participate in some activities. A wide variety of disabilities result in mobility impairments, and can range in severity from limitations of stamina to paralysis. Muscular dystrophy, multiple sclerosis, cerebral palsy, spinal cord injury, head injury, amputation, arthritis and back disorders are a few examples of mobility disabilities.

Mobility disabilities can be present at birth, while others are the result of illness or injury. Quadriplegia refers to the loss of function in arms, legs and trunk areas. Individuals with quadriplegia have limited use of their arms and hands and little or no use of their legs. Many require motorized wheelchairs. Arthritis causes inflammation in the body's joints, resulting in pain and mobility difficulties. Back disorders hamper the individual's ability to sit, stand, walk, bend or carry objects easily. Cerebral palsy is the result of brain damage before or shortly after birth; it may result in speech difficulties, walking problems, spasms and lack of muscle coordination.

Each mobility disability results in different levels of physical difficulties, and individuals vary in the way the disability affects them. Mobility disabilities can either be permanent or temporary but will affect how an individual accesses the CAP site and the computer workstation.

Common supports and accommodations for people with mobility disabilities in the CAP sites might include accessible parking, priority registration, accessible facilities, lab or computer assistants, simple adaptive computer technologies (such as key guards), consideration of workstation set-up and note takers during lessons.

A variety of issues must be considered before addressing access to the computer for people with mobility impairments. These include seating and posture, work surface, lighting, temperature, vibrations, noise, ventilation, keyboards (information input) and mouse access, monitor (information output) and accessories.

Computer access for people with mobility disabilities may be achieved through:

- keyboard adaptations;
- alternative keyboards;
- an expanded keyboard;
- a mini keyboard;
- mouse alternatives; and
- assistive technology software.

Simple solutions include the modification of key repeat rates and sequential keystroke selection. Keyboard macros allow the user to assign a few keystrokes to perform functions that would normally take multiple keystrokes. Word prediction software limits the number of keystrokes required to enter words and phrases.

Keyboard adaptations can be made with hardware or software.

Hardware includes key guards and key locks. Software adaptations include Easy Access (Mac) and Access DOS (IBM) alternative keyboards, including PowerPad, Big Keys Unicorn Expanded Keyboard, Intellikeys, TouchWindow and on-screen keyboards, Tash Minikeyboard, KeyLargo, chordic keyboards, braille keyboards, and so on. Some alternative keyboards plug into the serial ports of any computer (Intellikeys). Other devices (Unicorn Expanded Keyboard) require additional equipment.

More involved mobility disabilities require alternative input, including:

- the TongueTouch Keypad;
- single-switch on-screen keyboard access with scanning;
- single-switch access using Morse code;
- voice recognition software;
- head mouse/head master and pointing devices;
- JOUSE — a joystick-operated mouse controlled with the mouth;
- voice input;
- eye gaze technology;
- head wands or Sip N' Puff; and
- on-screen keyboards with regular or alternative mouse access (track pads, joysticks, trackball).

General Resources for People with Mobility Disabilities

<http://www.canparaplegic.org/> (Canadian)

Information about the Canadian Paraplegic Association, spinal cord injury, provincial representation, programs and services, fund-raising and recent news. Discussion groups also available.

Alternative Contact:

Canadian Paraplegic Association
230-1101 Prince of Wales Drive
Ottawa ON K2C 3W7
Tel.: (613) 723-1033
Fax: (613) 723-1060

<http://www.activeliving.ca/activeliving/alliance/links.html> (Canadian)

The Active Living Alliance for Canadians with a Disability has links to Canadian organizations for people with disabilities.

Alternative Contact:

Active Living Alliance for Canadians with a Disability
230-1101 Prince of Wales Drive
Ottawa ON K2C 3W7
Tel.: (613) 723-8710
Toll-free: 1-800-771-0663
Fax: (613) 723-1060

<http://www.wapd.org>

The World Association of Persons with disAbilities has an assistive technology page, chat room, bulletin board and many links.

Assistive Technology Products for People with Mobility Disabilities

A good place to start searching for information on assistive technology for people with mobility impairments is the Neil Squire Foundation Page or Apple Computer's Web site if you are using a Macintosh computer, or IBM's Special Needs Web site if you are using an IBM or compatible. These sites list some of the available products and have links to the companies' Web pages. The Typing Injury Frequently Asked Questions

(FAQs) pages provide very useful information about available keyboards and speech recognition software.

<http://www.neilsquire.ca/> (Canadian)

Neil Squire Foundation. JOUSE is a joystick-operated mouse controlled with the mouth. Moving the joystick moves the cursor. 1-Key provides the perfect solution for people who have difficulty pressing two keys at once. EzScan is an on-screen scanning keyboard that can be operated from a single or dual switch attached to the game or serial port. EzMorse: Morse code is one of the most efficient alternative computer access methods.

Alternative Contact:

Head Office in British Columbia

Tel.: (604) 473-9363

<http://www.apple.com/education/k12/disability/physical.html>

Apple Computer's page for people with physical disabilities includes keyboards (Discover:Board, IntelliKeys, Magic Wand Keyboard, MacMini Keyboard); pointing devices (Mac TouchWindow, TurboMouse, NoHands Mouse, Freestyle); software to assist with pointing devices (Easy Access, MouseKeys); other input devices (Dragon Power Secretary, Doors, HeadMouse, Magic Wand Keyboard, OnScreen); and links to companies that make ergonomically designed products.

<http://www.austin.ibm.com/sns/>

IBM Special Needs Systems has AccessDOS (utilities that provide easier access to DOS for people with disabilities) and speech input utilities (ViaVoice and Simply Speaking).

<http://www.tifaq.org/keyboards.html>

The Typing Injury Frequently Asked Questions (FAQs) page about alternative keyboards is designed for people with typing injuries, but contains very useful information about what keyboards are available, proper placement (ergonomics), etc.

<http://www.tifaq.org/speech.html>

The Typing Injury Frequently Asked Questions (FAQs) page has an extensive list of speech recognition software.

<http://www.eyecan.ca> (Canadian)

VisionKey is a keyboard operated by eye movements, and is especially useful for those who are not only unable to use a keyboard, but may also be without speech.

Alternative Contact:

H.K. Eyecan Ltd.
36 Burland Street
Ottawa ON K2B 6J8
Toll-free: 1-800-356-3362
Fax: (613) 596-4300

<http://www.tashint.com/> (Canadian)

Alternative keyboard control, software solutions, low-tech solutions, how to pick a switch, how to test a switch, and mounting solutions.

Alternative Contact:

Tash
1-91 Station Street
Ajax ON L1S 3H2
Toll-free: 1-800-463-5685
Fax: (905) 686-6895

<http://www.laptop-laidback.com/index2.html> (Canadian)

The Laptop Laidback is a special table that allows you to use a laptop while lying on your back.

Alternative Contact:

Laidback We "R" Inc.
P.O. Box 271
151 Lochside Road
Arichat NS B0E 1A0
Tel.: (902) 226-3092
Fax: (902) 226-0066

<http://www.dgp.toronto.edu/matias/> (Canadian)

Matias makes the Half-QWERTY keyboard, which is software that allows you to type using only one half of the keyboard.

Alternative Contact:

The Matias Corporation
1204-600 Rexdale Boulevard
Rexdale ON M9W 6T4
Tel.: (416) 749-3124
Toll-free: 1-888-663-4263
Fax: (416) 740-4132

<http://www.dragonflytoys.com/> (Canadian)

Dragonfly Toys makes products to assist children with disabilities, including augmentative communication devices, educational software, switches, alternative input devices and many others.

Alternative Contact:

The Dragonfly Toy Company
291 Yale Avenue
Winnipeg MB R3M 0L4
Tel.: (204) 453-2222
Toll-free: 1-800-308-2208
Fax: (204) 453-2320

<http://www.djtech.com/aurora/> (Canadian)

Aurora produces word prediction software (Aurora Prediction), text-to-speech software (Aurora Echo, Aurora RealVoice), as well as augmentative communication software and products for people with speech impairments.

Alternative Contact:

Aurora Systems Inc.
Box 43005
4739 Willingdon Avenue
Burnaby BC V5G 3H0
Tel.: (604) 291-6310
Toll-free: 1-888-290-1133
Fax: (604) 291-6310

<http://www.wivik.com/> (Canadian)

Various products for physical and learning disabilities; downloads available. On-screen keyboards. WiViK 2 allows use of any pointing device to enter text into any Windows application, with word prediction and scanning as add-ons. Keyboard writing tools, on-screen keyboards and augmentative communication.

Alternative Contact:

Bloorview MacMillan Centre
350 Rumsey Road
Toronto ON M4G 1R8
Tel.: (416) 425-6220
Fax: (416) 425-6591

<http://www.microsoft.com/enable/products/aids.htm>

Microsoft's page of on-screen keyboard utilities includes HandiKEY, My-T-Mouse, My-T-Soft, REACH Interface Author, REACH Smart Key Technology, SAW, ScreenDoors II, SofType WiViK 2 Pointing Access, WiViK 2 Switch Access and WordAid.

Keyboard enhancement utilities (e.g. word prediction software) include Aurora, HandiSHIFT, HandiWORD, IntelliTalk, Joystick-To-Mouse, KeyREP, SoothSayer Word Prediction, Telepathic II and WordAid. Voice input utilities include DragonDictate, IN CUBE Voice Command and Kurzweil VOICE.

<http://www.Intellitools.com/productinformation.html>

IntelliTools makes IntelliKeys, an alternative keyboard, as well as other products such as IntelliTalk, IntelliPics, Clickit! and Overlay Maker.

Alternative Contact:

Bridges
2999 King Street West
Inglewood ON L0N 1K0
Tel.: (905) 838-1411
Toll-free: 1-800-353-1107
Fax: (905) 838-1487

<http://infogrip.com>

Infogrip designs keyboards, input devices, adjustable desks and switch options for people with mobility impairments.

Alternative Contact:

Infogrip, Inc.
1141 E. Main Street
Ventura CA 93001
USA
Tel.: (805) 652-0770
Toll-free: 1-800-397-0921
Fax: (805) 652-0880
E-mail: **sales@infogrip.com**

<http://www.metroplexvoice.com/prod.htm>

Metroplex Voice Computing, Inc. designs math programs that use speech recognition, including MathTalk and VoiceEZcalc.

Alternative Contact:

Metroplex Voice Computing, Inc.
P.O. Box 121984
Arlington TX 76012
USA

<http://www.rjcooper.com/>

RJ Cooper sells learning software; access software for people with disabilities (OnScreen, SmartClick, CrossScanner, Biggy Cursor); hardware (Magic Touch Screen, Intellikeys, Switch-Adapted Mouse devices); and positioning arms (Magic Arm).

Alternative Contact:

RJ Cooper & Assoc.
283-24843 Del Prado
Dana Point CA 92629
USA
Tel.: (949) 661-6904
Fax: (949) 240-9785

<http://www.dragonsys.com/international/uk/products/index.html>

Dragon Systems continuous speech recognition products allow you to transcribe your ideas.

Alternative Contact:

Dragon Systems Inc. Headquarters

320 Nevada Street

Newton MA 02160

USA

Tel.: (617) 965-5200

Fax: (617) 965-2374

Download Demo Versions of Software for People with Mobility Disabilities

Listed below is a Web site from which you can download demo versions of certain products for people with mobility disabilities. Demo versions give you the opportunity to test software and see if it suits your needs. However, demo versions usually have some features missing or an expiry date allowing you a certain amount of time for evaluation.

<http://www.dgp.toronto.edu/matias/product.html> (Canadian)

Half-QWERTY keyboard software allows you to use only one half of your keyboard to type.

Alternative Contact:

The Matias Corporation

1204-600 Rexdale Boulevard

Rexdale ON M9W 6T4

Tel.: (416) 749-3124

Toll-free: 1-888-663-4263

Fax: (416) 740-4132

BLIND OR LOW VISION

Technology supporting individuals with low vision includes hardware or software that overcomes barriers to print:

- print magnification devices;
- glare protection screens;
- high-resolution, large-screen monitors;
- system options that allow the user to alter screen contrast; and
- keyboard orientation supports such as raised dots on the keyboard or large sticky key labels.
- Individuals with very limited vision, or who are blind, require auditory or tactile access features to use computer technology. Standard auditory feedback software includes:
 - text-to-speech, software-synthesized speech;
 - tape-recorded material;
 - optical character recognition systems that provide scanned material to be read back to the primary user;
 - screen-reader software allowing auditory feedback of the screen's contents including Web pages;
 - braille translation software; and
 - hardware and software that allows braille to be input directly into the computer (e.g. Braille n' Speak: a portable braille recording device that connects to the computer for translation, screen output or printing).

Tactile access involves pointing devices that convert information on the screen to information the user can feel and interpret. Examples of these devices include Mousecat by VisuAide and Virtual Reality Mouse developed by Control Advancements and distributed by Betacom.

Speech recognition is used by individuals with limited or no vision to provide voice commands and mouse manipulation, bypassing keyboard or drop menu selections altogether. Technical supports vary depending on the primary user.

General Resources for People Who Are Blind or Have Low Vision

<http://www.cnib.ca/> (Canadian)

The Canadian National Institute for the Blind (CNIB) Web page has information about the CNIB and its services, on-line books, information on braille and news. Regional offices across Canada.

Alternative Contact:

The CNIB Library for the Blind
1929 Bayview Avenue
Toronto ON M4G 3E8
Tel.: (416) 480-7520
Toll-free: 1-800-268-8818
Fax: (416) 480-7700

<http://www2.ebtech.net/~sarwcane/ccb.htm> (Canadian)

The Canadian Council of the Blind (CCB) is a federally chartered (registered non-profit charitable organization) national consumer advocacy organization that was founded in 1944 in London, Ontario. Over the years, the CCB has grown and evolved to become recognized as Canada's "voice of blind Canadians."

Alternative Contact:

Canadian Council of the Blind
P.O. Box 2310, Station D
Ottawa ON K1A 8N5

Other sources of information:

Canadian Deaf-Blind & Rubella Association — Atlantic
Special Education Resource Centre for the Hearing Impaired
P.O. Box 308
Amherst NS B4H 3Z6
Tel.: (902) 667-3808

Canadian Deaf-Blind & Rubella Association — New Brunswick
87 Fisher Avenue
Fredericton NB E3A 4J1
Tel.: (506) 452-1544

<http://www.viguide.com/>

The V.I. Guide: "A guide to Internet resources about visual impairments, for parents and teachers," has links to sites for information, assistive technology and other resources for visually impaired people.

<http://www.hicom.net/~oedipus/blind.html>

Blindness-Related Resources on the Web and Beyond is a great site with links to many resources, including Canadian organizations for the blind.

<http://www.nyise.org/blind.htm#index>

The Blindness Resource Center provides many links to resources for blindness/visual impairment.

Assistive Technology Products for People Who Are Blind or Have Low Vision

A good place to start looking for assistive technology for people who are blind or have low vision is the following sites.

- Betacom is a Canadian distributor and manufacturer of technological solutions for people who are blind or have low vision.
- If you are using a Macintosh computer, Apple's disability Web site provides information and links to products.
- If you are using an IBM computer, the IBM Special Needs Web site is an informative site.
- The Adapted Computer Technologies page is a good site for either type of computer.

These sites sort the products by disability and type of product (e.g. magnification utilities, speech recognition, braille displays, etc.), and provide a good overview of the products available in each category, complete with descriptions and links to the vendor Web sites.

<http://www.betacom.com/> (Canadian)

Distributors and manufacturers of technological solutions for those with visual, physical, communication or learning disabilities.

Alternative Contact:

Betacom
2999 King Street West
Inglewood ON L0N 1K0
Tel.: (905) 838-1411
Toll-free: 1-800-353-1107
Fax: (905) 838-1487

<http://www.apple.com/education/k12/disability/visual.html>

This is Apple Computer's page of products for people with a visual impairment. It includes speech software (outSPOKEN); braille software (Duxbury Braille Translator); links to companies that sell braille embossers and scanner/OCR hardware; screen-magnification software (inLARGE, CloseView, ZoomCaps); and screen-magnification hardware (magnification lenses).

<http://www.austin.ibm.com/sns/>

IBM Special Needs Solutions has speech software such as SpeechViewer III and Visual Voice Tools, Home Page Reader (a Web browser that speaks), Screen Magnifier and Screen Reader, which reads text and screen information out loud.

<http://compuaccess.com/vision.htm>

Adapted Computer Technologies has an extensive list of technologies to assist visually impaired people, links to Web sites for many of the products, as well as phone numbers and prices.

Alternative Contact:

Tel.: (949) 459-5241
Fax: (949) 459-9581

<http://www.synthavoice.on.ca/> (Canadian)

Slimware Window Bridge, a screen-review program, provides full access to the graphical environment of Microsoft Windows.

Alternative Contact:

SYNTHA-VOICE COMPUTERS INC.

304-800 Queenston Road

Stoney Creek ON L8G 1A7

Tel.: (905) 662-0565

Fax: (905) 662-0568

Ordering Hot-line: 1-800-263-4540

<http://www.frontiercomputing.on.ca/> (Canadian)

Frontier Computing makes products for visually impaired people, including braille displays, braille printers, braille translators, screen enlargers, note takers, voice input software and speech recognition software.

Alternative Contact:

Frontier Computing

406-2221 Yonge Street

Toronto ON M4S 2B4

Tel.: (416) 489-6690

Toll-free: 1-888-480-0000

Fax: (416) 489-6693

<http://www.visuaide.com/> (Canadian, bilingual)

VisuAide produces speech, braille and magnification products for people with visual impairments.

Alternative Contact:

VisuAide

841 Jean-Paul Vincent Boulevard

Longueuil QC J4G 1R3

Tel.: (450) 463-1717

Toll-free: 1-888-723-7273

Fax: (450) 463-0120

<http://www.compusult.nf.ca/> (Canadian)

Compusult has developed software, hardware, on-line services and information management systems, and specializes in speech technology, automatic identification and Internet applications. It provides system integration, networking, speech technology and assistive devices for people who have low vision or who are blind.

Alternative Contact:

Compusult Limited
40 Bannister Street
Mount Pearl NF A1N 1W1
Tel.: (709) 745-7914
Fax: (709) 745-7927

<http://msdnisv.microsoft.com/enable/aids/catalog.asp>

Microsoft's page of screen-enlarger utilities includes video adapters (9FX Series and Imagine 128); software that converts text to large print (LP-Windows, PANORAMA Window Bridge, POWERAMA Window Bridge); and screen magnifiers (Lunar Screen Magnifier, MAGic, MagniPORT, MAGNUM 95, MAGNUM Deluxe, ProVision32, Super Vista, Vista PCI, Supernova Reader Magnifier, The Magnifier, ZoomText).

<http://www.dragonsystems.com>

Dragon Systems produces speech-input software, including Dragon NaturallySpeaking, Dragon Point&Speak, DragonXTool and their many variations.

<http://infogrip.com/vision.htm>

Infogrip sells several programs for the visually impaired, including In Large, JAWS, MAGic, Magnifier with Cursor Location, Maxview Magnifier, outSPOKEN, ZoomText, ZoomText Xtra Level 2.

<http://www.mayerjohnson.com/>

The Mayer-Johnson Co. produces Speaking Dynamically and Boardmaker, and sells many other hardware and software products for the visually impaired.

<http://www.humanware.com>

HumanWare sells many hardware and software products in the following categories: braille displays, magnifiers, text-to-speech and braille translators.

Alternative Contact:

HumanWare
6245 King Road
Loomis CA 95650
USA
Toll-free: 1-800-722-3393

<http://www.duxburysystems.com/products.html>

Duxbury Systems produces the Duxbury Braille Translator, a program that can change print into braille and vice versa.

Alternative Contact:

Duxbury Systems
6245 King Road
Loomis CA 95650
USA
Tel.: (978) 692-3000
Toll-free: 1-800-722-3393
Fax: (978) 692-7912

<http://www.rdcbraille.com/>

Braille Planet makes Megadots braille production software, as well as MegaMath and Beginner Braille.

Alternative Contact:

Duxbury Systems
Tel.: (978) 692-3000
Toll-free: 1-800-722-3393
Fax: (978) 692-7912

<http://www.metroplexvoice.com/prod.htm>

Metroplex Voice Computing, Inc. makes math programs that use speech recognition, such as ArithmeticTalk, MathTalk and VoiceEZcalc. They also sell variations of these programs, such as MathTalk Deluxe and MathTalk Pro.

Alternative Contact:

Metroplex Voice Computing, Inc.
P.O. Box 121984
Arlington TX 76012
USA

<http://www.ergopro.com/ateaseglare.html>

Glare protection screens.

Alternative Contact:

Ergonomic Products
P.O. Box 25914, #225
Houston TX 77265
USA
Tel.: (713) 723-3746
Toll-free: 1-800-374-6776
Fax: (713) 662-2451

<http://www.zdnet.com/pcmag/features/monitors/>

A review of high-resolution monitors.

Download Demo Versions of Software for People Who Are Blind or Have Low Vision

Listed below are Web sites from which you can download demo versions of certain products for people who are blind or have low vision. Demo versions give you the opportunity to test software and see if it suits your needs. However, demo versions usually have some features missing or an expiry date allowing you a certain amount of time for evaluation.

<http://home.earthlink.net/~mail4tdb/demos.htm>

The Outpost has demo versions of ASAP, ASAW, JAWS, outSPOKEN, Tiny Talk, Vocal Eyes, Window Eyes and Winspeech.

http://www.aagi.com/aagi/aagi_home.html

ALVA Access Group sells inLARGE, a screen magnifier and outSPOKEN, a program that reads out loud from the screen. Both programs are available in demo form for download.

Alternative Contact:

ALVA Access Group Inc.
475-5801 Christie Avenue
Emeryville CA 94608
USA
Tel.: (510) 923-6280
Fax: (510) 923-6270

<http://www.duxburysystems.com/demodl.html>

Duxbury Systems has a demo version of the Duxbury Braille Translator that is available for download.

<http://www.barefootinc.com/zoomlens.htm>

ZoomLens is a screen-magnification program for Windows.

Alternative Contact:

Barefoot Productions Inc.
1101 West Enclave Circle
Louisville CO 80027
USA

DEAF OR HARD OF HEARING

People who are deaf or hard of hearing confront barriers to oral information just as people who are blind or have low vision face barriers to print. Computer strategies assist users with hearing impairments to enhance oral, manual and written communication skills.

Technologies that overcome the auditory barrier fall into two categories: amplification of auditory input to enhance residual hearing and the addition of other types of inputs to supplement or replace auditory information.

At the CAP site, it may be necessary to employ an interpreter to provide accessible training opportunities to the learner who is deaf. However, there are CD-ROMs now available that teach an introduction to the Internet through American Sign Language (ASL) (Basic Internet in American Sign Language. Technology Assessment Development Centre (TADC). (904) 424-1890.)

Another option is to provide captioning or the addition of text to audiovisual display. For Macintosh and Windows platforms, auditory beeps can be converted to visual signals, and the menu bar will flash when set to do so. For IBM and IBM-compatible platforms, accessibility options include Sound Sentry. When this feature is on, the entire screen flashes on and off, and ShowSounds will display captions for the sounds they make.

Computers are often used as well to teach communication skills to students with hearing loss through computer-based applications for speech, communication and written language skill development.

General Resources for People Who Are Deaf or Hard of Hearing

<http://www.chs.ca/> (Canadian)

The Canadian Hearing Society's Web site has information about hearing impairment, job opportunities, organizations and assistive technology.

Alternative Contact:

Canadian Hearing Society
271 Spadina Road
Toronto ON M5R 2V3
Tel.: (416) 964-9595
TTY: (416) 964-0023
Fax: (416) 928-2525

<http://www.cyberus.ca/~chhanational/> (Canadian)

The Canadian Hard of Hearing Association (CHHA) is Canada's only nationwide, non-profit consumer organization run by, and for, hard of hearing people. It has information on resources available for, and about, the hearing impaired and links to assistive/technical devices information on the Web. It also tells where to find a local chapter of the association in your province. The CHHA has an Ottawa-based national office, 41 local branches and six provincial chapters.

Alternative Contact:

Canadian Hard of Hearing Association
205-2435 Holly Lane
Ottawa ON K1V 7P2
Toll-free: 1-800-263-8068
TTY: (613) 526-2692
Fax: (613) 526-4718

<http://www.cad.ca/> (Canadian)

The Canadian Association of the Deaf (CAD) Web site is available in English and French. The CAD's mandate is to protect and promote the rights, needs and concerns of Canadians who are deaf. It provides a list of publications available relating to deaf rights and needs, as well as links to other organizations with similar mandates.

Alternative Contact:

Canadian Association of the Deaf
203-251 Bank Street
Ottawa ON K2P 1X3
Tel./TTY: (613) 565-2882
Fax: (613) 565-1207

<http://www.deafnet.com/> (Canadian)

DeafTelecom is a leader in deaf videophone technology and is dedicated to communication through the use of sign language. The site has a huge list of links of interest to the deaf community.

Alternative Contact:

DeafTelecom
106-940 Blanshard Street
Victoria BC V8W 2H3
Tel.: (250) 953-6670
Fax: (250) 953-6659

<http://www.interlog.com/~signnet/> (Canadian)

The Signers' Network is a Canadian site with links to other organizations, a magazine and information on events and employment for the hearing impaired.

Alternative Contact:

The Signers' Network
74 Mayfair Crescent
Brampton ON L6S 3N4
Tel./Fax: (905) 792-9889

<http://home.iSTAR.ca/~sabaker/> (Canadian)

The Western Institute for the Deaf and Hard of Hearing addresses the needs of deaf, deafened and hard of hearing individuals by providing products, services and programs that work toward ensuring accessibility to their environment equal to that of the hearing public.

Alternative Contact:

Western Institute for the Deaf and Hard of Hearing
2125 West 7th Avenue
Vancouver BC V6K 1X9
Tel.: (604) 736-7391
TTY: (604) 736-2527
Fax: (604) 736-4381

<http://www.cvm.qc.ca/dcb/Pages/interp.htm> (Canadian, French)
Definitions of terms, the profession of sign language interpretation and how to become an interpreter, frequently asked questions (FAQs), and visitor suggestions.

<http://www3.sympatico.ca/adsmq/assoc> (Canadian, French)
L'Association des devenus sourds et des malentendants du Québec is run by its membership. The Association brings together people who are becoming or are deaf, and those who are hard of hearing.

Alternative Contact:

L'Association des devenus sourds et des malentendants du Québec
7400 St. Laurent Boulevard, #35/36
Montréal QC H2R 2Y1
Tel.: (514) 278-9633
TTY: (514) 278-9636
Fax: (514) 278-9075

<http://www.surdite.org> (Canadian, French)
The goal is to develop an Internet site with Francophone content for those with hearing disabilities. The site has a listing of the resources and services available in each region of Quebec, in Canada and in Francophone countries, together with links to these other sites.

<http://www.cvm.qc.ca/dcb/bottin.htm> (Canadian, French)
Listing of Internet addresses for sign language and oral interpreters for the deaf and hard of hearing.

<http://www.cvm.qc.ca/dcb/pages/engage.htm> (Canadian, French)
General considerations when engaging and working with a sign language and oral interpreter.

<http://www.deaflibrary.org/>
The Deaf Resource Library is an excellent resource site with links to magazines and catalogues, as well as information about HTML accessibility, American Sign Language and Japanese Sign Language. It also provides many links to organizations for the deaf in various countries, deaf sites, deaf schools, interpreting, captioning and assistive technology.

<http://www.gallaudet.edu/~nicd/>

The National Information Center on Deafness has on-line articles, links to publications and services, and other resources.

Alternative Contact:

National Information Center on Deafness

Tel.: (202) 651-5051

TTY: (202) 651-5052

Fax: (202) 651-5054

Assistive Technology Products for People Who Are Deaf or Hard of Hearing

<http://www.alds.com/> (Canadian)

Assistive Listening Device Systems Inc. makes infrared assistive listening devices, telephone and loop testers, T-switch training aids and computerized note-taking systems. Dealers across Canada, the United States and Europe.

Alternative Contact:

ALDS

2-11220 Voyageur Way

Richmond BC V6X 3E1

Toll-free (Tel./TTY): 1-800-665-2537

Fax: (604) 270-6308

<http://www.textel.com/> (Canadian)

TEXTEL is a "text telephone" that uses software and a modem to allow hearing-impaired users to accept calls from a TDD/TTY telephone through their computer.

Alternative Contact:

Sinclair, Nicholson and Associates

77 Lightfoot Place

Kanata ON K2L 3M1

Tel.: (613) 599-1284

TDD/TTY: (613) 599-1246

Fax: (613) 599-1245

<http://www.deafnet.com/> (Canadian)

DeafTelecom is a leader in deaf videophone technology and is dedicated to communication through the use of sign language. The site has a huge list of links of interest to the deaf community.

<http://www.palatineinc.com/>

Palatine Inc. makes American Sign Language software.

Alternative Contact:

Palatine Inc.

632-4742 42nd Avenue SW

Seattle WA 98116

USA

Tel.: (206) 933-5958

Fax: (206) 933-6301

<http://voice.jrc.it/>

Conversion of voice to text for people who are deaf for use in conferences and university courses, meetings, etc.

TRAUMATIC HEAD INJURY AND COGNITIVE DELAY

Head injury is also referred to as traumatic brain injury (TBI), closed head injury, open head injury or cerebrovascular accident. A head injury is a physical manifestation and has physical, cognitive and emotional extremes.

- Some of the difficulties individuals who have sustained a head injury encounter include:
- processing;
- attention deficit;
- concentration;
- long- and short-term memory retention;
- motor skills;
- problem solving;
- following multi-step directions; and
- verbal expression.

The level of difficulties will depend on the individual and the extent of the injury.

Physical Disabilities and Traumatic Head Injury

With severe head trauma, often the individual has been in a coma for a long period. As a result, physical and cognitive delay or regression may occur. Physical manifestations of severe head injury include hemiplegia and quadriplegia. This can prevent effective access to computers if assistive technology is not appropriately assessed for and provided.

In terms of intellectual delay, some individuals with head injury have difficulties with language expression. Information output might also be compromised by ataxia problems and decreased motor speed.

The best way to teach individuals with head injury is to use all approaches to learning, including visual, auditory and hands-on (kinesthetic) tactics.

Cognitive Deficits and Traumatic Head Injury

Almost all neurologically impaired individuals display attention or concentration deficits. Attention or concentration refers to the amount of time an individual stays on task. It might mean the short amount of time it takes to hear information or the length of time it takes to process that information.

Distractibility includes difficulty following instructions, an inability to manage two or more steps in one task simultaneously, or an inability to shift attention. When working on a computer with an individual with head injury, keep instructions simple and straightforward. Repeat the instruction or activity a number of times for the individual to remember.

Improving the organization of auditory memory will improve overall recall. Keep in mind that at one time these processes may have been automatic. Following brain trauma, they take conscious effort, since the individual's brain might have lost the ability to perform the function automatically. Necessary remediation for individuals training on computer technology includes repetition, multi-modal cuing, consistency and generalization from one context to another.

In the computer classroom, individuals with TBI might display memory deficits expressed through difficulty with new learning, difficulty returning to a task after interruption, misinterpretation, confusion, difficulty transferring new information, information that is content bound, or an inability to add on to previously learned information.

An individual's ability to perceive and understand information seen, heard or touched is considered comprehension. An individual with TBI will display difficulties with comprehension showing itself in the following ways:

- difficulty understanding written and pictorial directions;
- difficulty following conversations (due to vocabulary);
- misinterpretation of auditory and visual information;
- literal interpretations of jokes and proverbs; and
- decreased understanding of questions.

Comprehension difficulties must be considered when working on a computer with an individual with TBI. Appropriate physical access is necessary along with the appropriate software and, most important, sufficient and adequate training. Ongoing technical support is a must for individuals with head injury. Because problem solving is difficult for many individuals with TBI, troubleshooting technical problems is frustrating.

Indications of problem-solving difficulties include:

- inflexibility;
- limitation in convergent and divergent thinking;
- difficulty anticipating consequences;
- difficulty anticipating cause-effect relationships;
- failure to plan ahead;
- problems in the analysis or synthesis of information; and
- reduced creativity.

General Resources for People with Traumatic Head Injury

<http://www.rickhansen.org/info/index2.html> (Canadian)

The Rick Hansen Institute site has information on the Man in Motion Tour, and the Neurotrauma Initiative Grant application forms and guidelines.

Alternative Contact:

The Rick Hansen Institute
1040-1874 East Mall
University of British Columbia
Vancouver BC V6T 1Z1
Tel.: (604) 822-4433
Fax: (604) 822-9486

<http://www.neuroskills.com/index.html>

The Traumatic Brain Injury Resource Guide.

<http://www.headinjury.com/>

Headinjury.com provides an overview of what a head injury is, the different kinds of head injuries and the potential results.

<http://www.headinjury.com/#introduction>

Headinjury.com is the Web site of the Head Injury Hotline. It has lots of information about head injuries, news, chat, forums and resources.

<http://www.biausa.org/>

The Brain Injury Association, Inc. has information about brain injury and brain injury conferences, associations, news, links, chat and more.

Alternative Contact:

Brain Injury Association, Inc.

105 North Alfred Street

Alexandria VA 22314

USA

Tel.: (703) 236-6000

Fax: (703) 236-6001

Assistive Technology Products for People with Traumatic Head Injury

The following companies sell software or hardware designed for people with head injury. Products designed for people with learning disabilities or mobility impairments may also be of use, depending on the impairment resulting from the head injury.

<http://www.parrotsoftware.com/Merchant/merchant.mv?>

Parrot Software's on-line store sells software and hardware for people with many types of brain injuries, including memory and attention, cognitive retraining, logic and reasoning, reading and word finding, grammar and vocabulary, and voice recognition software. The store also sells Touch Windows.

Alternative Contact:

Parrot Software

P.O. Box 250755

West Bloomfield MI 48325

USA

Toll-free: 1-800-727-7681

Fax: (248) 788-3224

<http://www.brain-train.com/>

Brain Train sells cognitive retraining software for people with brain injuries, and has links to articles about brain injuries, as well as shareware and freeware that could be useful.

Alternative Contact:

Brain Train

8343 Currant Way

Parker CO 80134

USA

E-mail: info@brain-train.com

LEARNING DISABILITIES/DIFFICULTIES

People with learning disabilities (LD) are individuals who “can see, can hear, have general intelligence in the near-average, average or above-average range; have educational difficulties that do not stem from inadequate educational experience or cultural factors; and do not acquire and use information efficiently due to some impairment in perception, conceptualization, language, memory, attention or motor control” (Harwell, 1989).

There are a great many resources and assistive technology supports available for individuals with learning disabilities. Some computer-based assistive technologies that provide support to people with learning disabilities include:

- voice input (bypassing the keyboard and having to sequence letters and spell);
- text-to-speech software;
- optical character recognition (scans text and provides read-back capabilities); and
- graphic organizer software that provides opportunities to visually organize and plot information.

Physical access to the CAP site generally will not be an issue for someone with a learning disability (assuming there is no accompanying physical disability). However, training programs might present barriers. Attention, concentration, sequencing information and organization are some of the difficulties people with learning disabilities face. The sites listed below offer some suggestions and strategies for providing supports for individuals with learning disabilities.

General Resources for People with Learning Disabilities

<http://edu-ss10.educ.queensu.ca/~lda/ldac/ldachome.html> (Canadian)
The Learning Disabilities Association of Canada provides articles, addresses of learning disabilities associations for each province and a definition of learning disabilities.

Alternative Contact:

Learning Disabilities Association of Canada
323 Chapel Street
Ottawa ON K1N 7Z2
Tel.: (613) 238-5721
Fax: (613) 235-5391

<http://www.ldonline.org/>

LD Online is an excellent site with extensive information and links.

<http://www.ldresources.com/>

LD Resources has articles about learning disabilities, lists and other resources.

Assistive Technology Products for People with Learning Disabilities

There is information on products for people with learning disabilities on the Aurora Web site, the Apple Computer site, and the IBM Special Needs page, as well as ordering information and links to the companies that make the products. The sites give an overview of what products are available so you can compare and see which would best suit your needs. An excellent source of information on learning disabilities in general, and technologies that specifically support learning disabilities, is found at the Ldonline site noted above which is linked to:

http://www.ldonline.org/ld_indepth/technology/raskind1.html

<http://www.djtech.com/aurora/> (Canadian)

Aurora produces word prediction software (Aurora Prediction), text-to-speech software (Aurora Echo, Aurora RealVoice) as well as augmentative communication software and products for people with speech disabilities.

Alternative Contact:

Aurora Systems Inc.
Box 43005
4739 Willingdon Avenue
Burnaby BC V5G 3H0
Tel.: (604) 291-6310
Toll-free: 1-888-290-1133
Fax: (604) 291-6310

<http://www.apple.com/education/k12/disability/learning.html>

Apple Computer's page for learning and speaking disabilities has spell-checkers (Spell Catcher, Co:Writer, Write:OutLoud) and text-to-speech programs (Talk:About, Write:OutLoud, Speaking Dynamically, Dynavok Mac).

<http://www.apple.com/education/k12/disability/specialed.html>

Apple Computer's educational software page has links to Broderbund (The Learning Company), Don Johnston, Edmark and Wings for Learning/Sunburst.

<http://www.austin.ibm.com/sns/>

IBM Special Needs Systems provides speech input utilities (ViaVoice, Simply Speaking), text-to-speech utilities (Home Page Reader, Screen Reader) and WYNN.

<http://www.is-inc.com/> (Canadian)

WriteAway software promoting written expression and literacy.

Alternative Contact:

Information Services Inc.
P.O. Box 7056 Water Street
St. John's NF A1E 3Y3
Tel.: (709) 754-2289
Fax: (709) 754-2461

<http://www.inspiration.com>

A program for individuals with learning difficulties, specifically the organization of information. Generates a wide variety of graphic organizers. Download demo available.

Alternative Contact:

Inspiration Software, Inc.
102-7412 SW Beaverton Hillsdale Highway
Portland OR 97225-2167
USA
Tel.: (503) 297-3004
Toll-free: 1-800-877-4292
Fax: (503) 297-4676

<http://www.dragonsystems.com>

Dragon Systems produces speech-input software such as Dragon NaturallySpeaking, Dragon Point&Speak, DragonXTools and their many variations.

<http://www.microsoft.com/enable/products/aids.htm>

This is Microsoft's page of screen-review utilities — programs that read text from the screen out loud (text-to-speech programs). The products listed on this page are ASAP, DRACULAwIn, Hal Screen Reader, JAWS, OKO 97, Orpheus Software Speech System, outSPOKEN, Protalk32, Screen Reader/2, Screen Power, Simply Talker, SLIMWARE Window Bridge, Supernova Reader Magnifier, VIRGO 2, Virtual Vision, Visions FWD, WINDOTS 2, Window Eyes, Windows Master, WinVision, WiVox and ZoomText.

<http://www.microsoft.com/enable/products/aids.htm>

Microsoft's page of keyboard enhancement utilities (e.g. word prediction software) includes Aurora, HandiSHIFT, HandiWORD, IntelliTalk, Joystick-To-Mouse, KeyREP, SoothSayer Word Prediction, Telepathic II and WordAid.

<http://www.donjohnston.com/catalog/disabil.htm>

Don Johnston Incorporated makes many products for people with learning disabilities, including Co:Writer, Write:OutLoud, Discover:Kenx, Simon Sounds It Out and UKanDu books.

Alternative Contact:

Don Johnston Incorporated
Toll-free: 1-800-999-4660

<http://www.edmark.com>

The Edmark Corporation sells educational software, including the Mighty Math series, the Thinkin' Things series, the Early Learning House series, and many other products that can help students who have learning disabilities.

Alternative Contact:
Edmark Corporation
Toll-free: 1-800-691-2986
Fax: (425) 556-8400

<http://www.metroplexvoice.com/prod.htm>

Metroplex Voice Computers designs math programs that use speech recognition, including MathTalk and VoiceEZcalc.

Download Demo Versions of Software for People with Learning Disabilities

Listed below are Web sites from which you can download demo versions of certain products for people with learning disabilities. Demo versions give you the opportunity to test software and see if it suits your needs. However, demo versions usually have some features missing or an expiry date allowing you a certain amount of time for evaluation.

<http://www.austin.ibm.com/sns/>

At the IBM Special Needs Systems page, you can download demo versions of Home Page Reader, Self Voicing Kit, SpeechViewer III and WYNN.

<http://www.synapseadaptive.com/demosite/demosite.htm>

Synapse Adaptive's download page also has information on how to order a free CD of Laureate demo software.

<http://new.shoptlc.com/downloads.asp>

The Learning Company has a free CD you can order with demo versions of some of its products.

<http://www.inspiration.com>

A program for individuals with learning difficulties, specifically the organization of information. Generates a wide variety of graphic organizers.

<http://www.mayerjohnson.com/Indxdist/Download.htm>

Mayer-Johnson sells Boardmaker and Speaking Dynamically, as well as many other programs for learning-disabled people, especially programs that teach language skills.

Alternative Contact:

Mayer-Johnson Co.

Toll-free: 1-800-588-4548

Fax: (858) 550-0449

<http://www.is-inc.com/>

Software promoting written expression and literacy.

COMMUNICATION DISORDERS

Some individuals participating in CAP activities might have difficulties with receptive and expressive communication. Communication difficulties stem from a wide variety of causes including stroke, head injury and learning difficulties. Some computer-based assistive technology supports for people with communication difficulties include voice output, word prediction software, on-screen communication boards, hand-held communication boards and graphic organizers for visual cuing of thought expression. For information and support for these individuals, see the references below.

Assistive Technology Products for People with Communication Disorders

<http://www.djtech.com/aurora/> (Canadian)

Aurora produces word prediction software (Aurora Prediction), text-to-speech software (Aurora Echo, Aurora RealVoice), as well as augmentative communication software and products for people with speech impairments.

Alternative Contact:

Aurora Systems Inc.

Box 43005

4739 Willingdon Avenue

Burnaby BC V5G 3H0

Tel.: (604) 291-6310

Toll-free: 1-888-290-1133

Fax: (604) 291-6310

<http://www.avaaz.com/> (Canadian)

AVAAZ makes hardware and software for people with speech impairments. Demo versions of three products (Computerized Speech Research Environment, Speech Assessment & Interactive Learning System, and Time Frequency Representation) are available.

Alternative Contact:

AVAAZ Innovations, Inc.
P.O. Box 8040
1225 Wonderland Road North
London ON N6G 2B0
Tel.: (519) 472-7944
Fax: (519) 472-7814

<http://wwwdim.uqac.uquebec.ca/~j6trembl/> (Canadian, French)
Information and communication technology resources in education.

<http://www.caslpa.ca/english/index.html> (Canadian)
The Canadian Association of Speech-Language Pathologists and Audiologists' Web site has useful links for people interested in learning about speech impairment, and addresses and Web sites (where they exist) for associations in each province.

Alternative Contact:

Canadian Association of Speech-Language Pathologists and Audiologists
National Office
2006-130 Albert Street
Ottawa ON K1P 5G4
Tel.: (613) 567-9968
Toll-free: 1-800-259-8519
Fax: (613) 567-2859

<http://home.iSTAR.ca/~bci/> (Canadian)
Blissymbolics Communication International (BCI) offers information on BCI, news and events of BCI, using Blissymbolics, learning Blissymbolics and more.

Alternative Contact:

Blissymbolics Communication International
104-1630 Lawrence Avenue West
Toronto ON M6L 1C5
Tel.: (416) 242-9114
Fax: (416) 244-6543

<http://www.isaac-online.org/>

ISAAC (International Society for Augmentative and Alternative Communication) is a multidisciplinary organization devoted to the field of augmentative and alternative communication (AAC). ISAAC has 2800 members in more than 50 countries, including 11 national/regional chapters. Membership is international and includes all persons interested in AAC. The purpose of ISAAC is to advance the transdisciplinary field of AAC, facilitate information exchange and focus attention on work in the field.

Alternative Contact:

ISAAC

P.O. Box 1762, Station R

Toronto ON M4G 4A3

Tel.: (905) 737-9308

Fax: (905)737-0624

<http://www.members.home.net/emg1>

The Speech Source is a well-designed site with a great deal of information on, and links to sites on, speech impairment, voice and fluency disabilities, and other disabilities.

<http://www.nichcy.org/pubs/factshe/fs11txt.htm>

The National Information Center for Children and Youth with Disabilities provides this fact sheet about speech impairment and communication disorders. It gives an overview of these disorders, and has links to organizations and a list of books about speech impairment.

Alternative Contact:

National Information Center for Children and Youth with Disabilities

P.O. Box 1492

Washington DC 20013

USA

Toll-free (Tel./TTY): 1-800-695-0285

<http://www.nih.gov/nidcd/>

The National Institute on Deafness and Other Communication Disorders has information on aphasia, autism, stuttering and other communication disorders as well as information on research about these disorders.

Alternative Contact:

National Institute on Deafness and Other Communication Disorders
National Institutes of Health
31 Center Drive, MSC 2320
Bethesda MD 20892-2320
USA
Tel.: (301) 496-7243
TTY: (301) 402-0252
Fax: (301) 402-0018

http://www.wolfenet.com/~dr_bill/seleccom.html

The Computers for Handicapped Independence Program provides this list of products for people with speech impairments.

Alternative Contact:

Computers for Handicapped Independence Program
3-502 North 6th Street
Yakima WA 98901
USA
Tel.: (509) 457-4506

<http://www.assistivetech.com/prod-index.htm>

Assistive Technology, Inc. makes several products, including FreeStyle (a custom computer for people with disabilities); LINK (a keyboard that talks); MultiVoice (a speech synthesizer); Eyeware (a system that allows you to control the computer with your eyes); WriteAway (an enhanced word processor); MultiPhone (a system for managing a telephone via a computer); and Companion (an authoring tool for creating applications).

<http://www.dynavoxsys.com>

DynaVox makes numerous products for people with speech impairments, including DynaVox and DigiVox.

Alternative Contact:

DynaVox Systems Inc.

Tel.: (905) 761-3705

Toll-free: 1-888-703-9021, ext. 3705

<http://www.gusinc.com/speechsystem.html>

Gus Communications Inc. makes the Gus! Multimedia Speech System, a text-to-speech program that can help people with speech impairments to communicate by using a computer.

Alternative Contact:

Gus Communications Inc.

1006 Lonetree Court

Bellingham WA 98226-3167

USA

Tel.: (360) 715-8580

Fax: (360) 715-9633

<http://www.houstonsoftware.com/speakout.htm>

SpeakOUT! is a text-to-speech program that allows people with speech impairments to use a computer to speak for them.

Alternative Contact:

Houston Software

406-8075 Reading Road

Cincinnati OH 45237

USA

Tel.: (513) 948-9222

Fax: (513) 948-1400

<http://www.parrotsoftware.com/>

Parrot Software is a company that sells software for people who have a head injury.

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<http://www.cec.sped.org/bk/ec-jour.htm> *Exceptional Children* is a respected scholarly journal in special education. It publishes original research on the education and development of children from infants to youth. It is an official quarterly publication of The Council for Exceptional Children. The Council for Exceptional Children (CEC), 1920 Association Drive, Reston, Virginia 20191-1589 USA. Tel.: (703) 620-3660; Toll-free: 1-888-232-7733; TTY: (703) 264-9446; Fax: (703) 264-9494.

<http://www.cec.sped.org/bk/abttec.htm> *TEACHING Exceptional Children* is published specifically for teachers and administrators. It covers the latest data on technology, assistive technology and methods and techniques to use with students with exceptionalities.

<http://www.teleport.com/~dsolns/info.htm> *Disability Solutions* is the free publication of The Enoch-Gelbard Foundation that has current information relating to developmental disabilities for parents, families, self-advocates and professionals. It is full of practical suggestions. Disability Solutions, 9220 SW Barbur Boulevard, #119-179, Portland, Oregon 97219 USA. Fax: (503) 246-3869. Back issues can be downloaded from this Web site: **<http://www.disabilitysolutions.org>**

<http://www.churchillmed.com/Journals/LearnDis/jhome.html> *The Journal of Learning Disabilities for Nursing, Health and Social Care* provides a means to exchange ideas on the ways to advance the services for people with learning disabilities.

<http://www.cec.sped.org/bk/catalog/16.htm> Council of Exceptional Children Today Online publishes three journals: *Teaching Exceptional Children*, *Exceptional Children* and *Exceptional Child Education Resources*.

<http://www.inform.umd.edu/EdRes/Topic/Diversity/Specific/Disability/> The University of Maryland Diversity Database has articles by, and for, professionals concerned with assistive technology for people with disabilities.

Closing the Gap. Bi-monthly newsletter reviewing hardware and software products appropriate for persons with special needs. P.O. Box 68, Henderson, Minnesota 56044 USA. Tel.: (507) 248-3294.

Exceptional Parent — The Magazine for Families & Professionals. All about parenting your child or young adult who has a disability. Monthly. Psy-Ed Corp., 303-209 Harvard Street, Brookline, Massachusetts 02146-5005 USA. Toll-free: 1-800-562-1973 or 1-800-247-8080.

Journal of Special Education Technology. A publication of the technology and media division of the Council for Exceptional Children. Peabody College. P.O. Box 328, Vanderbilt University, Nashville, Tennessee 37203 USA.

Learning Disabilities — A Multidisciplinary Journal. Twice yearly publication of the Learning Disabilities Association of America, 4156 Library Road, Pittsburgh, Pennsylvania 15234 USA. Tel.: (412) 341-1515.

Learning Disabilities Quarterly. Quarterly publication of the Council for Learning Disabilities (CLD). Subscription is included in CLD membership fees or available separately. Council for Learning Disabilities, P.O. Box 40303, Overland Park, Kansas 66204 USA. Tel.: (913) 492-8755; Fax: (913) 492-2546.

Newsbriefs. Non-technical publication of the Learning Disabilities Association (LDA) of America, 4156 Library Road, Pittsburgh, Pennsylvania 15234 USA. Tel.: (412) 341-1515. Free with LDA membership or non-member subscription available.

Technology and Disability. Elsevier Science Ireland Ltd. Shannon Industrial Estate, Shannon, Co. Clare, Ireland. c/o Elsevier Science Regional Sales Office, Customer Support Department, 655 Avenue of the Americas, New York, New York 10010 USA.

The Journal of Special Education. A quarterly research journal in the field of special education for individuals with mild to severe disabilities. PRO-ED Journals, 8700 Shoal Creek Boulevard, Austin, Texas 78757-6897 USA. Tel.: (512) 451-3246.

